

THE NATURAL PHILOSOPHY OF LOVE

BY

REMY DE GOURMONT

TRANSLATED WITH A POSTSCRIPT

BY

EZRA POUND

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CONTENTS

CHAPTER	PAGE
1. THE SUBJECT OF AN IDEA	I
Love's general psychology—Love according to natural laws —Sexual selection—Man's place in Nature—Identity of human and animal psychology—The animal nature of love.	
2. THE AIM OF LIFE	7
The importance of the sexual act—Its ineluctable character —Animals who live only to reproduce themselves—The strife for love, and for death—Females fecundated at the very instant of birth—The maintenance of life.	
3. SCALE OF SEXES	11
Asexual reproduction—Formation of the animal colony— Limits of asexual reproduction—Coupling—Birth of the sexes—Hermaphroditism and parthenogenesis—Chemical fecundation—Universality of parthenogenesis.	
4. SEXUAL DIMORPHISM I	18
Invertebrates : formation of the male—Primitivity of the female—Minuscule males : the bonelli—Regression of the male into the male organ : the cirripedes—Generality of sexual dimorphism—Superiority of the female in most in- sect species—Exceptions—Numeric dimorphism—Female hymenoptera—Multiplicity of her activities—Male's purely sexual rôle—Dimorphism of ants and termites—Grass- hoppers and crickets—Spiders—Coleoptera—Glow-worm —Cochineal's strange dimorphism.	

Contents

CHAPTER	PAGE
5. SEXUAL DIMORPHISM II	29
Vertebrates : Unnoticeable in fish, saurians, reptiles—The bird world—Dimorphism favourable to males : the oriole, pheasants, the ruff—Peacocks and turkey-cocks—Birds of paradise—Moderate dimorphism of mammifers—Effects of castration on dimorphism.	
6. SEXUAL DIMORPHISM III	34
Vertebrates (continued) :—Man and woman—Characteristics and limits of human dimorphism—Effects of civilization—Psychological dimorphism—The insect world and the human—Modern dimorphism, basis of the pair—Solidarity of the human pair—Dimorphism and polygamy—The pair favours the female—Sexual æsthetics—Causes of the superiority of feminine beauty.	
7. SEXUAL DIMORPHISM AND FEMINISM	42
Inferiority and superiority of the female as shown in animal species—Influence of feeding on the production of sexes—The female would have sufficed—Feminism absolute, and moderate—Pipe-dreams : elimination of the male and human parthenogenesis.	
8. LOVE-ORGANS	46
Sexual dimorphism and parallelism—Sexual organs of man and of woman—Constancy of sexual parallelism in the animal series—External sexual organs of placentary mammifera—Form and position of the penis—The penial bone—The clitoris—The vagina—The teats—Forked prong of marsupials—Sexual organs of reptiles—Fish and birds with a penial organ—Genital organs of arthropods—Attempt to classify animals according to the disposition, presence, and absence of exterior organs for reproduction.	

Contents

CHAPTER

PAGE

9. THE MECHANISM OF LOVE I	56
<p>Copulation : vertebrates—Its very numerous varieties and its specific fixity—The apparent immorality of Nature—Sexual ethnography—Human mechanism—Cavalage or mounting—The form and duration of coupling in divers mammals—Aberrations of sexual surgery, the ampallang—Pain as a bridle on sex—Maidenhead—The mole—Passivity of the female—The ovule, psychological figure of the female—Mania of attributing human virtues to animals—The modesty of elephants—Coupling mechanism in whales, seals, tortoises—In certain ophidians and in certain fish.</p>	
10. THE MECHANISM OF LOVE II	69
<p>Copulation (continued)—Arthropods—Scorpions—Large aquatic crustaceans—Small crustaceans—The hydrachne—Scutillary—Cockchafer—Butterflies—Flies, etc.—Variation of animals' sexual habits.</p>	
11. THE MECHANISM OF LOVE III	75
<p>Of birds and fish—Males without penis—Coupling by simple contact—Salacity of birds—Copulation of batrachians : accoucheur toad, aquatic toad, earth toad, pipa toad—Foetal parasitism—Chastity of fish—Sexes separated in love—Onanistic fecundation—Cephalopods, the spermatophore.</p>	
12. THE MECHANISM OF LOVE IV	83
<p>Hermaphroditism—Sexual life of oysters—Gasteropods—The idea of reproduction and the idea of pleasure—Mechanism of reciprocal reproduction : helices—Spintrian habits—Reflections on hermaphroditism.</p>	

Contents

CHAPTER	PAGE
13. THE MECHANISM OF LOVE V	87
Artificial fecundation—Disjunction of the secreting apparatus from the copulating apparatus—Spiders—Discovery of their copulative method—Brutality of the female—Habits of the epeira—The argyronete—The tarantula—Exceptions: the reapers—Dragon-flies—Picture of their love affairs.	
14. THE MECHANISM OF LOVE VI	94
Cannibalism in sex—Females who devour the male, those who devour the spermatophore—Probable use of these practices—Fecundation by the whole male—Loves of the white foreheaded dectic—The green grasshopper—The Alpine analote—The ephippigere—Further reflections on the cannibalism of sex—Loves of the praying mantis.	
15. THE SEXUAL PARADE	100
Universality of the caress, of amorous preludes—Their rôle in fecundation—Sexual games of birds—How cantharides caress—Males' combats—Pretended combats of birds—Dance of the tetras—Gardener bird—His country house—His taste for flowers—Reflections on the origin of his art—Combats of crickets—Parade of butterflies—Sexual sense of orientation—The Great-Peacock moth—Animals' submission to orders of Nature—Transmutation of physical values—Rutting calendar.	
16. POLYGAMY	112
Rarity of monogamy—Taste for change in animals—Rôles of monogamy and polygamy in the stability or instability of specific types—Strife of the couple against polygamy—Couples among insects—Among fish, batrachians, saurians—Monogamy of pigeons, of nightingales—Monogamy in carnivores, in rodents—Habits of the rabbit—The ichneu-	

Contents

CHAPTER

PAGE

mon—Unknown causes of polygamy—Rarity and superabundance of males—Polygamy in insects—In fish—In gallinaceæ, in web-footed birds—In herbivores—The antelope's harem—Human polygamy—How it tempers the couple among civilized races.

17. LOVE AMONG SOCIAL ANIMALS 126

Organization of reproduction among hymenoptera—Bees—Wedding of the queen—Mother bee, cause and consciousness of the hive—Sexual royalty—Limits of intelligence among bees—Natural logic and human logic—Wasps—Bumble-bees—Ants—Notes on their habits—Very advanced state of their civilization—Slavery and parasitism among ants—Termites—The nine principal active forms of termites—Great age of their civilization—Beavers—Tendency of industrious animals to inactivity.

18. THE QUESTION OF ABERRATIONS 139

Two sorts of sexual aberration—Sexual aberrations of animals—Those of men—Crossing of species—Chastity—Modesty—Varieties and localizations of sexual bashfulness—Artificial creation of modesty—Sort of modesty natural to all females—Cruelty—Picture of carnage—The cricket eaten alive—Habits of carabs—Every living creature is a prey—Necessity to kill or to be killed.

19. INSTINCT 149

Can one oppose instinct to intelligence?—Instinct in man—Primordially of intelligence—Instinct's conservative rôle—Modifying rôle of intelligence—Intelligence and consciousness—Parity of animal and human instinct—Mechanical character of the instinctive act—Instinct modified by intelligence—Habit of work creates useless work—Objections to the identification of instinct and intelligence taken from life of insects.

Contents

CHAPTER	PAGE
20. TYRANNY OF THE NERVOUS SYSTEM	158
<p>Accord and discord between organs and acts—Tarses and sacred scarab—The hand of man—Mediocre fitness of sexual organs for copulation—Origin of "luxuria"—The animal is a nervous system served by organs—The organ does not determine the aptitude—Man's hand inferior to his genius—Substitution of one sense for another—Union and rôle of the senses in love—Man and animal under the tyranny of the nervous system—Wear and tear of humanity compensated by acquisitions—Man's inheritors.</p>	
TRANSLATOR'S POSTSCRIPT	169
BIBLIOGRAPHY: PRINCIPAL WORKS CONSULTED	181

THE NATURAL PHILOSOPHY OF LOVE

Chapter I

The Subject of an Idea

Love's general psychology—Love according to natural laws—Sexual selection—Man's place in Nature—Identity of human and animal psychology—The animal nature of love.

THIS book, which is only an essay, because its subject matter is so immense, represents, nevertheless, an ambition: one wanted to enlarge the general psychology of love, starting it in the very beginning of male and female activity, and giving man's sexual life its place in the one plan of universal sexuality.

Certain moralists have, undeniably, pretended to talk about "love in relation to natural causes," but they were profoundly ignorant of these natural causes: thus Sénancour, whose book, blotted though it be with ideology, remains the boldest work on a subject so essential that nothing can drag it to triviality. If Sénancour had been acquainted with the science of his time, if he had only read Réaumur and Bonnet, Buffon and Lamarck; if he had been able to merge the two ideas, man and animal, into one, being a man without insurmountable prejudices, he might have produced a still readable book. The moment

The Natural Philosophy of Love

would have been favourable. People were beginning to have some exact knowledge of animals' habits. Bonnet had proved the startling relationships of animal and vegetable reproduction; the essential principle of physiology had been found; the science of life was brief enough to be clear; one might have ventured a theory as to the psychological unity of the animal series.

Such a work would have prevented numerous follies in the century then beginning. One would have become accustomed to consider human love as one form of numberless forms, and not, perhaps, the most remarkable of the lot, a form which clothes the universal instinct of reproduction; and its apparent anomalies would have found a normal explanation amid Nature's extravagance. Darwin arrived, inaugurated a useful system, but his views were too systematized, his aim too explanatory and his scale of creatures with man at the summit, as the culmination of universal effort, is of a too theological simplicity. Man is not the culmination of nature, he is *in Nature*, he is *one* of the unities of life, that is all. He is the product of a partial, not of total evolution; the branch whereon he blossoms, parts like a thousand other branches from a common trunk. Moreover, Darwin, truckling to the religious pudibundery of his race, has almost wholly neglected the actual facts of sex; this makes his theory of sexual selection, as the principle of change, incomprehensible. But even if he had taken account of the real mechanism of love, his conclusions, possibly more logical, would still have been inexact, for if sexual selection has any aim it can be but conservation. Fecundation is the reintegration of differentiated elements into a unique element, a perpetual return to the unity.

It is not particularly interesting to consider human acts as the fruits of evolution, for upon animal branches as clearly

The Subject of an Idea

separate as those of insect and mammifer one finds sexual acts and social customs sensibly analogous, if not identical in many points.

If insects and mammals have any common ancestor, save the primordial jelly, there must indeed have been very different potentialities in its amorphous contours to lead it here into being bee and there into being giraffe. An evolution leading to such diverse results has interest only as a metaphysical idea, psychology can get from it next to nothing of value.

We must abandon the old ladder whose rungs the evolutionists ascended with such difficulty. We will imagine, metaphorically, a centre of life, with multiple lives diverging from it; having passed the unicellular phase, we will take no count of hypothetical subordinations. One does not wish to deny, one wishes rather not to deny, either general or particular evolutions, but the genealogies are too uncertain and the thread which unites them too often broken: what, for example, is the origin of birds, organisms which seem at once a progress and a retrogression from the mammifer? On reflection, one will consider the different love-mechanisms of all the diœcians as parallel and contemporary.

Man will then find himself in his proper and rather indistinct place in the crowd, beside the monkeys, rodents and bats. Psychologically, one must quite often compare him with insects, marvellous flowering of the life force. And what clarity comes from the process, lights pouring in from all corners! Feminine coquetry, the flight before the male, the return, the game of yes and no, the uncertain attitude seeming at once cruel and amorous, and not peculiar to the female human? Not at all. C  lim  ne is of all species, and heteroclite above all; she is both mole and spider, she is sparrow and cantharide, she is cricket and adder. A celebrated author in a play called,

The Natural Philosophy of Love

I think, *La Fille Sauvage*, represents feminine love as aggressive. It is an error. The female attacked by the male thinks always of retreat, she never, never attacks, save in certain species which appear to be very ancient and which have persisted to our time only by prodigies of equilibrium. Even there one must make reserves, for when one sees the female aggressive, it is perhaps at the second or fourth phase of the game, not at the beginning. The female sleeps until the male arouses her, then she gives in, plays, or takes flight. The virgin's reserve before man is but a very moderate bashfulness if compared with the pell-mell flight of a young virgin mole.

This is but one fact of a thousand. There is not one way of instinctive man with a maid which is not findable in one or other animal species; this is perfectly comprehensible seeing that man is an animal, submitted to the essential instincts which govern all animality; there being everywhere the same matter animate with the same desire: to live, to perpetuate life. Man's superiority is in the immense diversity of his aptitudes. Animals are confined to one series of gestures, always the same ones, man varies his mimicry without limit; *but* the target is the same, and the result is the same—copulation, fecundation and eggs.

Belief in liberty has been born from the diversity of human aptitude, from man's power to reach the necessary termination of his activity by different routes, or to dodge this termination and slay in himself the species whose future he bears. This liberty is an illusion difficult not to have, an idea which one must shed if one wants to think in a manner not wholly irrational, but it is recompensingly certain that the multiplicity of possible activities is almost an equivalent of this liberty. Doubtless the strongest motive always wins, but to-day's stronger is to-morrow's weaker, hence a variety of human gaits feigning liberty, and

The Subject of an Idea

practically resulting therein. Free will is only the faculty of being guided successively by a great number of different motives. When choice is possible, liberty begins, even though the chosen act is rigorously determined and when there is no possibility of avoiding it. Animals have a smaller liberty, restricted in proportion as their aptitudes are more limited ; but when life begins liberty begins. The distinction, from this view-point, between man and animal is quantitative, and not qualitative. One must not be gulled by the scholastic distinction between instinct and intelligence ; man is as full of instincts as the insect most visibly instinctive ; he obeys them by methods more diverse, that is all.

If it is clear that man is an animal, it is also clear that he is a very complex one. One finds in him most of the aptitudes which are distributed one by one among beasts. There is hardly one of his habits, of his virtues, of his vices (to use the conventional terms) which cannot be found either in an insect, a bird or a mammifer : monogamy, adultery, the "consequences" ; polygamy, polyandry, lasciviousness, laziness, activity, cruelty, courage, devotion, any of these are common to animals, but each as the quality of a whole species. In the state of differentiation to which superior and cultivated human species have attained, each individual forms surely a separate variety determined by what is called, abstractly, "the character." This individual differentiation, very marked in mankind, is less marked in other animal species. Yet we note quite distinct characters in dogs, in horses and even in birds of the same race. It is quite probable that all bees have not the same character, since, for example, they are not all equally prompt to use their stings in analogous circumstances. Even there the difference between man and his brothers in life and in sensibility is but a difference of degree.

The Natural Philosophy of Love

"Solidarity" is but an empty ideology if one limit it to the human species. There is no abyss between man and animal; the two domains are separated by a tiny rivulet which a baby could step over. We are animals, we live on animals, and animals live on us. We both have and are parasites. We are predatory, and we are the living prey of the predatory. And when we follow the love act, it is truly, in the idiom of theologians, *more bestiarum*. Love is profoundly animal; therein is its beauty.

Chapter 2

The Aim of Life

The importance of the sexual act—Its ineluctable character—Animals who live only to reproduce themselves—The strife for love, and for death—Females fecundated at the very instant of birth—The maintenance of life.

WHAT is life's aim? Its maintenance.

But the very idea of an aim is a human illusion. There is neither beginning, nor middle, nor end in the series of causes. What is has been caused by what was, and what will be has for cause the existent. One can neither conceive a point of rest nor a point of beginning. Born of life, life will beget life eternally. She should, and wants to. Life is characterized on earth by the existence of individuals grouped into species, that is to say having the power, a male being united with a female, to reproduce a similar being. Whether it be the internal conjoining of protozoa, or hermaphrodite fecundation, or the coupling of insects or mammifers, the act is the same: it is common to all that lives, and this not only to animals but to plants, and possibly even to such minerals as are limited by a non-varying form. Of all possible acts, in the possibility that we can imagine, the sexual act is, therefore, the most important of all acts. Without it life comes to an end, and it is absurd to suppose its absence, for in that case thought itself disappears.

Revolt is useless against so evident a necessity. Our finikin scruples protest in vain; man and the most disgusting of his parasites are the products of an identical sexual mechanism. The flowers we have strewn upon love may disguise it as one

The Natural Philosophy of Love

disguises a trap for wild beasts ; all our activities manœuvre along the edge of this precipice and fall over it one after another ; the aim of human life is the continuation of human life.

Only in appearance does man escape this obligation of Nature. He escapes as an individual, and he submits as a species. The abuse of thought, religious prejudices, vices sterilize a part of humanity ; but this fraction is of merely sociological interest ; be he chaste or voluptuary, miserly or prodigal of his flesh, man is in his whole condition subject to the sexual tyranny. All men do not reproduce their species, neither do all animals ; the feeble and the late-comers among insects die in their robe of innocence, and many nests laboriously filled by courageous mothers are devastated by pirates or by the inclemency of the sky. Let the ascetic not come boasting that he has freed his blood from the pressure of desire ; the very importance which he ascribes to his victory but affirms the same power of the life-will.

A young girl, before the slightest love affair, will, if she is healthy, confess naively that she "wants to marry to have children." This so simple formula is the legend of Nature. What an animal seeks is not its own life but reproduction. Doubtless many animals seem, during a relatively long existence, to have but brief sexual periods, but one must make allowance for the period of gestation. In principle the sole occupation of any creature is to renew, by the sex act, the form wherewith it is clothed. To this end it eats, to this end builds. This act is so clearly the aim, unique and definite, that it constitutes the entire life of a very great number of animals, which are, notwithstanding, extremely complex.

The ephemera is born in the evening and copulates, the female lays eggs during the night, both are dead in the morning, without even having looked at the sun. These little animals are so little destined for anything else save love that they have not even

The Aim of Life

mouths. They eat not, neither do they drink. One sees them hovering in clouds above the water, among the reeds. The males, although more numerous than the females, perform a multiple duty and fall exhausted. The *purity* of such a life is to be admired in many butterflies: the silk-moths, heavy and clumsy, shake their wings for an instant at birth, couple and die. The Great Peacock or Oak Bombyx, much larger than they, eats no more than they do: yet we see him traverse leagues of country in his quest of the female. He has only a rudimentary proboscis and the semblance of a digestive apparatus. Thus his two or three days' existence passes without one egoistic act. The struggle for life, much vaunted, is here the struggle to give life, the struggle for death, for if they can live three days in search of the female they die as soon as the fecundation is accomplished.

Among all solitary bees, scolia, masons, bembex, and anthoporidae, the males born soonest range about the nests awaiting the birth of the females. As soon as these appear they are seized and fecundated, knowing, thus, life and love in the same shiver. The female osmies and other bees are keenly watched by the males who nab and mount them as they emerge from the natal tube, the hollow stalk of a reed, flying at once with them into the air where the love-feast is finished. Then while the male, drunk with his work, continues his death-flight, the female feverishly hollows the house of her offspring, partitions it, stores the honey for the larvæ, lays, whirls for an instant and dies. The year following, the same gestures above the same reeds split by the reed-gatherers; and thus in years following, the insect permitted never the least design save the conservation of one fragile form; brief apparition over flowers.

The sitaris is a coleopterous parasite in the nests of the anthoporidae. Copulation takes place on hatching. Fabre

The Natural Philosophy of Love

noticed a female still in her wrappings, whom a male already free was helping to get loose, waiting only the appearance of the extremity of the abdomen, to hurl himself thereupon. The sitaris's love lasts one minute, long season in a short life: the male drags on for two days before dying, the female lays on the very spot where she has been fecundated, dies having known nothing but the maternal function in the strictest limit of her birthplace.

No one has ever seen the female palingenia. This butterfly is fecundated before even getting rid of her nymph's corset, she dies with her eyes still shut, at once mother and infant in swaddling clothes. Moralists love bees from whom they distil examples and aphorisms. They recommend us work, order, economy, foresight, obedience and divers other virtues. Abandon yourself boldly to labour: Nature wills it. Nature wills everything. She is complacent to all the activities; to our imaginings there is no analogy that she will refuse, not one. She desires the social constructions of bees; she desires also the Life All Love of the Great Peacock, of the osmie, of the sitaris. She desires that the forms she has created shall continue indefinitely, and to this end all means are, to her, good. But if she presents us the laborious example of the bee, she does not hide from us the polyandrous example, nor the cruel amours of the mantis. There is not in the will to live the faintest trace of our poor little human morality. If one wishes a unique sole morality, that is to say a universal commandment, which all species may listen to, which they can follow in spirit and in letter, if one wishes in short to know the "aim of life" and the duty of the living, it is necessary, evidently, to find a formula which will totalize all the contradictions, break them and fuse them into a sole affirmation. There is but one, we may repeat it, without fear, and without allowing any objection: the aim of life is life's continuation.

Chapter 3

Scale of Sexes

Asexual reproduction—Formation of the animal colony—Limits of asexual reproduction—Coupling—Birth of the sexes—Hermaphroditism and parthenogenesis—Chemical fecundation—Universality of parthenogenesis.

THE primitive mode of reproduction is asexual, or what one will so consider provisionally, in comparison with more complex mechanism. In the first living forms there are neither sexual organs nor differentiated sexual elements. The animal reproduces itself by fission or by budding; the individual divides itself in two parts, or a protuberance develops, forms a new being and then separates.

Fission is an inexact term, for the division is transversal, and the two parts far from equal; it occurs in protozoa, and further in worms, star-fish and polyps. Budding is common to protozoa, infusoria, cœlenterata, to fresh-water polyps and to nearly all vegetables. A third primitive mode, sporulation, consists in the production inside the organism of particular cells, spores which separate and become individuals; this occurs in protozoa, as well as in ferns, algæ and mushrooms.

The first two modes, division and budding, serve also for the formation of animal colonies, when the new individual retains a point of contact with the generating individual. It is by this notion of colony that one explains complex beings, and even superior animals, in considering them as reunions of simple primitive beings which have differentiated themselves

The Natural Philosophy of Love

and still retained a solidarity, sharing the physiological work between them. Colonies of protozoa are formed of individuals having identical functions, living in perfect equality, despite the hierarchy of position ; colonies of metazoa are composed of specialised members whose separation may be a cause of death for the total individual. There is then, in the latter case, a new being composed of distinct elements which, retaining a certain essential autonomy, have become the organs of a new entity.

The first living organisms formed their hierarchies thus : individual unicellular, or plastid ; then a group of plastids or a meride. The merides, like the protozoa, can reproduce themselves asexually, or by division or budding. They may separate completely or remain attached to their generator. If they remain attached one has mounted a step and attained the zoide. Thence by colonies of zoides one gets individuals still more complex, called demes. None of these terms is much more than a convenience for memory. The nomenclature stops, as does the progression, at a certain moment, for the evolution has its limit, its finality, as does even the milieu in which life continues to evolve. One might say that heaving up from the obscure vital centre, the new animal-shoots branch upward until they knock their heads upon an ideal or imaginary roof which prevents any further climbing. This is the death of the species, and Nature contemptuously abandoning her work, begins to make yet another mould of the initial ooze, to derive from it a new form. The dream of an unlimited transformation of actual species is pure chimera ; they will disappear one by one, according to their order of primogeniture, according to their faculty for adapting themselves to the changing milieu, and one might foresee, if the earth lasts, in a distant time an unimaginable fauna replacing the present fauna, and even replacing man.

Man is a metazoan, that is to say an animal with differentiated

Scale of Sexes

pluricellules, like the sponge, the rotifers, and the annelida. He belongs to the artizoa series: a head, belly, back, bilateral symmetry; to the vertebrate branch: internal skeleton, cartilaginous and osseous; to the class of mammifers, to the sub-class of placentaries; to the group of primates not far from the chiropter (bat) and the rodent.

In regard to the life-transmitting mechanism the animals are divided somewhat differently. On one side budding and division, or fission, is prolonged rather far into the metazoic series concurrent with sexual reproduction; on the other hand there are, among protozoa, phenomena of coupling, unions of cellules which resemble veritable fecundation and perform its rôle; without the nuclear regeneration which is the aim and consequence, neither segmentation nor budding can take place, at least not indefinitely. In sum, the reproduction of beings is always sexual; only in the one case, the protozoa, it is produced by non-differentiated elements, and in the other, the metazoa, by differentiated elements, a male and a female. If one clips off bits of a sponge, a hydra, one obtains as many new individuals which when they have grown one may again divide, and so on repeatedly, but not indefinitely. At a variable instant, after a certain number of generations by fragmentation, senescence appears among the individuals thus produced; the clipped morsels remain inert. Thus this sort of artificial virgin-birth has a limit, as has normal parthenogenesis, and in order that the individuals may regain their parthenogenetic force one must give them time to regenerate their cellules by the coupling which fecundates them.

Fecundation is in all cases, doubtless, merely a rejuvenation, thus considered it is uniform not only throughout the animal series, but throughout the vegetable. One ought to experiment in slip-cutting, and discover at what point the slip cut from a

The Natural Philosophy of Love

slip begins to diminish in vitality. Coupling and fecundation have the same result : it is necessary that cellules A unite with cellules B (macro-nucleus and micro-nucleus among protozoa ; ovule and spermatozoid among metazoa), in order that the organism may usefully exteriorize a part of its substance. When the too complex organism has lost the primitive faculty of segmentation, it makes use, directly, to reproduce itself, of certain cellules differentiated for that purpose : it is these cellules united into a whole which reintegrate and give birth to a double of the generating individual or individuals. From the top to the bottom of the sexual scale the new being springs invariably from a duality. The multiplication takes place only in space. In time the product is a contraction, two giving one.

Fission is compatible with the existence of separate sexes, as in the starfish. This fantastic animal with no instrument save its suckers opens oysters, envelops them with its stomach which it unbellies (vomits), and devours them. It is not less curious on account of its various modes of reproduction, sexual apparatus, or budding, or casting an arm which becomes a new creature. Thus it is difficult to class animals according to their manner of reproduction ; hermaphroditism is another block. This mode is doubtless primitive, since it is of the type of protozoic coupling, but it is greatly complicated when it persists, for example, up to the moment where it disappears in the mollusc series, whereof some possess so luxurious a love-organism. The simple and very naïve form, that in which the sperm and the eggs are produced simultaneously inside the same individual, is found only in inferior organisms. Normal parthenogenesis belongs equally to summary and to complicated animals, to rotifers and to bees. Among arthropoda, that is to say among insects in general, the sexes are always separate, save in certain tardigrade arachnids, but these are the ones which offer the

Scale of Sexes

finest cases of parthenogenesis, generation without aid of the male. The term need not be taken literally. For as there is no indefinite fission without coupling, there is no unlimited parthenogenesis without fecundation: the female is fecundated for several generations which transmit this power, but there comes a day when the female who had not encountered a male gives birth to males and females. They couple and produce females parthenogenetically endowed. This has been for long time a mystery; it is still a mystery, for side by side with normal parthenogenesis there is irregular parthenogenesis, there are cases where non-fecundated eggs behave exactly as fecundated eggs, and no one knows why.

The virgin-begotten cycle of plant-lice is famous, that of rotifers not less entertaining. The males, smaller than the females, live but two or three days, couple and then die. The fecundated females lay eggs which produce nothing but females unless the eggs are subjected to a temperature above 18 degrees centigrade; above that the eggs hatch out males. Between the periods of coupling there are long stretches of virgin-birth, nothing but females producing females, until the temperature permits a male hatch. In two years the plant-lice runs through ten or twelve parthenogeneses; in July of the second year, there appear winged individuals, these are still female, but of double size, and they lay two sets of eggs, whereof the smaller eggs hatch male (the male is three or four times smaller than the female), the larger hatch female; there is coupling and the cycle begins again.

For long, people believed the plant-lice truly androgynous. Réaumur and Bonnet, having seen isolated plant-lice reproduce themselves, were convinced of this, when Trembley, a man of genius celebrated also for his observations of hydra, threw out the idea: Who knows whether a coupling of these lice does not

The Natural Philosophy of Love

fecundate them for several generations? He had discovered the basis of parthenogenesis. Facts upheld him. Bonnet described the male and female, and noted even the genital ardour of this sticking leaf-louse, this milch-cow of the ants.

Parthenogenesis is a signpost. Nothing more clearly demonstrates the importance of the male or the precision of his function. The female appears to be everything, without the male she is nothing. She is the machine and has to be wound up to go; the male is merely the key. People have tried to obtain fecundation by false keys. Eggs of sea-anemones, and starfish have been hatched by contact with exciting chemicals, acids, alkalies, sugar, salt, alcohol, ether, chloroform, strychnine, gas, carbonic acid. But one has never been able to bring these scientific larvæ to maturity, and everything leads one to believe that if one succeeded, and that if these artificial beings were capable of reproduction, it would be but for a limited period. This provoked parthenogenesis is neither more nor less interesting than the normal. It is doubtless abnormal, but abnormal parthenogenesis is not infrequent in nature; eggs of the bombyx, of starfish, and of frogs, hatch sometimes without fecundation, and very probably because they have accidentally come up against the very stimulant which the excellent experimenters have lavished on them. Whether sperm acts as an "excitant" or as fecundator, the action is no better explained by one label than by another. The queen-bee lays both fecundated and non-fecundated eggs; the former hatch female, the latter invariably male; here the male element would seem to be the product of parthenogenesis and the female to require previous fecundation. In contrast, among plant-lice, the generations of females continue for nearly two years. There is an order in these things, as in all things, but it is not yet apparent; one notes only, that however long and varied be the

Scale of Sexes

parthenogenetic period, it is limited somewhere by the necessity of the female principle being united with the male principle. After all, hereditary fecundation is no more extraordinary than particular fecundation, it is a mode of perpetuating life which the exercise of reason should make one consider as perfectly normal.

One ought, at the end of this summary chapter, to be courageous enough to say that fecundation, as vulgarly understood, is merely an illusion. Taking man and woman (or any other dioecious metazoan) the man does not fecundate the woman; what happens is at once more mysterious and more simple. From the great Male A, and from the great Female B are born without any fecundation whatever, spontaneously, little males *a* and little females *b*. These little males are called spermatozoids, and the little females, ovules; it is between these new creatures, between these spores, that the fecundating union occurs. One then observes that *a* and *b* resolve themselves into a third animal *x*, which by natural growth becomes in time another A or B. Then the cycle begins again. The union between A and B is merely a preparation; A and B are nothing but channels carrying *a* and *b*, carrying them often far beyond themselves. Like the plant-lice or drones, the mammifer called man is subject to alternate generation, one parthenogenesis always separating the veritable conjunction of the differentiated elements. Coupling is not fecundation; it is merely the mechanism; its utility is merely in that it puts two parthenogenetic products into relation. This relation occurs inside the female, or outside the female (as in case of fishes); the milieu has an importance of fact, not of principle.

Chapter 4

Sexual Dimorphism (I)

*Invertebrates : formation of the male—Primitivity of the female—
Minuscule males : the bonelli—Regression of the male into the male
organ : the cirripedes—Generality of sexual dimorphism—Superior-
ity of the female in most insect species—Exceptions—Numeric
dimorphism—Female hymenoptera—Multiplicity of her activities—
Male's purely sexual rôle—Dimorphism of ants and termites
—Grasshoppers and crickets—Spiders—Coleoptera—Glow-worm—
Cochineal's strange dimorphism.*

INVERTEBRATES.—At a moment fairly undecided in the general evolution the male organ specializes into the male individual. Religious symbolisms may or might have been intended to mean this. The female is primitive. At the third month, the human embryo has external uro-genital organs clearly resembling the female organs. To arrive at complete female estate they need undergo but a very slight modification ; to become male they have to undergo a considerable and very complex transformation. The external genital organs of the female are not, as has been often said, the product of an arrested development ; quite the contrary, the male organs undergo a supplementary development, which is moreover useless, for the penis is a luxury and a danger ; the bird who does without it is no less wanton thereby.

One finds general proof of the female's primitivity in the extreme smallness of certain male invertebrates, so tiny indeed that one can only consider them as autonomous masculine organs, or even as spermatozoids. The male of the syngames (an

Sexual Dimorphism

internal parasite of birds) is less a creature than an appendix ; he remains in constant contact with the organs of the female. Stuck obliquely into her side, and justifying the name "two-headed worm" which has been given to this wretched and duplex animalcule. The female bonellia is a sea worm shaped like a sort of cornucopia sack fifteen centimetres in length : the male is represented by a minuscule filament of about one or two millimetres, that is to say about one-thousandth her size. Each female supports about twenty males. These males live, first in the œsophagus, then descend into the oviduct where they impregnate the eggs. Only their very definite function clears them from the charge of being parasites ; in fact they were long supposed to be parasites, while men sought vainly for the male of the prodigious bonellia.

Side by side with males who are merely individualized sexual organs, one sees males who have lost nearly all organs save the male organ itself. Certain hermaphrodite cirripedes (molluscs attached by a peduncle [stalk]) cling as parasites to the coat of other cirripedes : whence a diminution of volume, a regression of ovaries, abolition of nutritive functions ; the stalk takes root in the living, nourishing milieu. But one organ, the male one, persists in these diminished cirripedes, and takes on enormous proportions, absorbing the whole of the animal. With only a slight further change one would see the transformation of male into male organ completely accomplished, as one does, moreover, in the hydraria. Become again an integral part of an organism from which it had formerly separated to become an individual, the male merely returns to its origins and clearly certifies what they were.

The bonellia, which is one of the most definite examples of dimorphism, is also an example of the singular feminism which one normally finds in nature. For feminism reigns there,

The Natural Philosophy of Love

especially among inferior species and in insects. It is almost only among mammifers and in certain groups of birds that the male is equal or superior to the female. One would say that he has slowly attained a first place not intended by nature for him. It is probable that, relieved of all care after the fecundation, he has had more leisure than the female wherein to develop his powers. It is also possible, and more probable, that these extremely diverse cases of resemblance and dissemblance are due to causes too numerous and too varied for us to seize their logical sequence. The facts are obvious: the male and the female differ nearly always, and differ often profoundly. Many insects vulgarly supposed to be different species are but males and females of one race seeking each other for mating. It needs some knowledge to recognize a pair of blackbirds, the male black all over, and the female brown-backed with grey throat and russet belly.

While hermaphroditism demands a perfect resemblance of individuals—save in cases like the cirripedes, where there is a male supplementary parasite—the separation of the sexes leads, in principle, to dimorphism, the rôle of the male and his modes of activity differ from those of the female; a difference found also among dioecious plants. Hemp is a well-known case, although the taller shoots which the peasants call male are in exact contrary, the females. The small garden-loving nettle has two sexes on the same stalk; the greater nettle, found in uncultivated land, is dioecious: the male stalk has very long flopping leaves and flowers hanging along the stem; the leaves and flowers of the female stalk are short and stand almost upright. Here the dimorphism is not in favour of the female, but impartial.

Among insects the female is nearly always the superior individual. It is not this marvellous small creature, nature's

Sexual Dimorphism

divergent and minuscule king who offers us the spectacle of the bilharzia, whereof the female, mediocre blade, lives like a sword sheathed in the hollow stomach of the male. This timid life and its perpetual amours would horrify the bold female scarabæa, adroit mason-bees, cold wise lycosidæ, and proud, terrible, amazonian mantes. In the insect world the male is the frail elegant sex, gentle and sober, with no employment save to please and to love. To the female the heavy work of digging, of masonry, and the danger of hunt and of war.

There are exceptions, but found chiefly among parasites, among the degraded, like the xenos which lives without distinction upon wasps, coleoptera, and neuroptera. The male is provided with two large wings; the female has neither wings, feet, eyes, nor antennæ, she is a small worm. After metamorphosis the male emerges, flies a little, then returns to the female who has remained inside the nymphal envelope, and fecundates her in her wrappings.

Other exceptions, this time normal, are furnished by butterflies, that is to say by a sort of insect which is very placid, and which, at least in the winged form, is addicted neither to hunting nor to any trade or business function. One gives the name "psyche" to a very small butterfly which flutters out rather clumsily in the morning; it is the male. The female is a huge worm, fifteen times as long, ten times as fat. The lovers are in the proportion of a cock to a cow. Here the feminism is wholly ludicrous. There is the same disproportion in the mulberry-bombyx, of which the female is much heavier than the male; she flies with difficulty, a passive beast who submits to a fecundation lasting several hours; likewise in the autumn-butterfly, cheimatobia, the male sports two pairs of fine wings on a spindle body, the female is a gross fat keg with rudimentary wings, incapable of flight; she climbs with difficulty into trees

The Natural Philosophy of Love

on whose buds her caterpillar feeds itself ; in the case of another butterfly which one calls, absurdly, the *orgyia*, the male has all the characteristics of *lepidoptera*, the female is almost wingless with a heavy and swollen body and a carriage about as pleasing as that of a monstrous wood-louse ; there is the same disproportion in the graceful, agile and delicate *liparis*, known as the "zig-zag" because of his wing-markings ; he would hardly discover his mate without aid from instinct, she being a whitish beast with heavy abdomen ruminating motionless in the bark of the tree. Neighbouring species, the monk, the brown-rump, the gold-rump show hardly any sexual differences.

Numeric dimorphism follows dimorphism of mass ; the family of one sort of butterfly of the Marquesas Islands is composed of one male and of five females all different, so different that one long supposed them distinct species. Here the advantage is obviously on the side of the male lord of this splendid harem. Nature, profoundly ignorant of our paltry ideas of justice and equality, vastly pampers certain animal species, while showing herself harsh and indifferent to others ; now the male is favoured, now the female upon whom the greatest mass of superiorities is heaped, and upon whom likewise all the cruelties and disdains. The *hymenoptera* include bees, bumblebees, wasps, *scolidæ*, ants, masons, *sphex*, *bembex*, *osmies*, etc. The place of these among insects is analogous to that of the primates or even of man among mammals. But while woman, not physically inferior to her male, remains below him in nearly all intellectual activities, among the *hymenoptera* the female is both brain and the tool, the engineer, the working-staff, the mistress, mother, and nurse unless, as in the case of bees, she casts upon a third sex all duties not purely sexual. The males make love. The male of the *tachyte*, a sort of wasp rather like the *sphex*, is about eight times smaller than the female, but he

Sexual Dimorphism

is a very ardent small lover, marvellously equipped for the amorous quest ; his citron-coloured diadem is made of eyes, is a girdle of enormous eyes, a lighthouse whence he explores his horizon, ready to fall like an arrow upon the loitering female. When fecundated, the she-tachyte constructs a cellular nest which she packs with the terrible mantis; of whom she is the always victorious enemy ; for knowing by incomprehensible instinct whether she is about to lay a male or a female egg, she augments or diminishes, according to its sex, the larder for the larva : the tiny male is allotted a dwarf provision.

The male hornet is notably smaller than the female, and the neuter hornet still smaller. The male pine-lophyr is black, the female yellow. The male of the mason-bee is russet, the far more beautiful female is a fine velvety black with deep violet wings. While the male loafs and bumbles she artfully and patiently rears the big-domed clay nest where her offspring pass their larvæ days. This bee lives in colonies, but the labour is individual, each doing her work without bothering about that of her neighbour, unless it be to rob her or spoil her construction, as in a civilization not unknown to us. The female mason is armed, but by no means aggressive.

In many hymenoptera only the female carries the sword, as in the case of the gilded wasp, gold-striped over blue or red, who can project a long needle from her abdomen ; or the female philanthus, who is carnivorous, while the puerile unarmed male lives upon flower-pollen. Not disdaining this natural dessert, the female philanthus will attack the nectar-loaded bee with her great dart, stab her and pump out her crop. One may see the ferocious small animal knead the dead bee for half an hour, squeeze her like a lemon, drink her out like a gourd. Charming and candid habits of these winged topazes whirring among the flowers ! Fabre has excused this sadistic-gourmandizing : the

The Natural Philosophy of Love

philanthus kills bees in order to feed her larvæ, who have, however, so great a repugnance for honey that they die upon contact with it ; it is therefore out of sheer maternal devotion that she intoxicates herself with this poison ! All things are, in nature, possible. But it might not be unreasonable to say that if the larvæ of the philanthus hate honey, it is because their greatly honey-loving mother has never allowed them a drop of it.

One of the rare cases of hymenoptera where the female appears inferior to the male is the mutilla or ant-spider. The male is larger, has wings and lives on flowers. The female is wingless, but provided with a noisy apparatus for attracting the male's attention. The male of the cynips of the oak-apple, the terminal cynips, has a blonde body with large diaphanous wings, the brown and black female is wingless. The male yellow cimbex slender, and brown with a spot of yellow, is so different from the round female with yellow belly and black head, that they were long thought of different species.

Ants like all social hymenoptera are, as one knows, divided into three sexes, winged males and females and wingless neuters. Fecundation takes place in the air ; the lovers fly up, join, fall enlocked, a golden cloud which the death of the males disperses, while the females, losing their wings, re-enter the house for egg-laying. The workers or neuters are generally smaller, as noticeably in the great red wood-ants, who dig their shelters in stumps. White ants or termites¹ show very accentuated dimorphism ; the female or queen having a head almost as large as that of a bee, a belly the thickness of one's finger, long in proportion, and growing to be fifteen times as large as the rest of her body. This sexual tub lays continuously without any

¹ These are neuroptera or pseudo-neuroptera, but their habits bring them noticeably near to social hymenoptera.

Sexual Dimorphism

pause at the speed of an egg per second. The male, as in Baudelaire's vision of the giantess, lives in the shadow of this formidable mountain of female power and luxury. Among the termites there is not a fourth sex but a fourth way of being sexless. There are soldiers as well as workers, the soldiers having powerful mandibles mounted on enormous heads. All the termite customs are extraordinary, and their conical nests reach a height having a relation to them that a house some fifteen hundred feet high would have to us.

Of mosquitoes and maringouin mosquitoes and all insects of that sort, the females alone prick and suck the blood of mammals. The male live on flowers and tree-trunks. One sees them in forest alleys and clearings, moving regularly as in army manoeuvres; they are scouting, watching for females. As soon as a male has caught one he seizes her, and disappears up into the air where the union is accomplished. Only the male cricket has a noise-machine, only the female a hearing mechanism, situated in her front legs. Likewise it is the male grasshopper who sounds. A love-call? People say so, but there is no proof. Grasshoppers live, male and female, in complete promiscuity lined up on the tree-bark; such a quantity of music is unnecessary, and, moreover, if the female is not deaf, she has an almost insensible hearing. It is probable that the song of insects and birds, if it is sometimes a love-call, is more often only a physiological exercise, at once necessary and disinterested. Fabre, who lived all his life among the implacable noises of the Provençal countryside, sees in "the violin of the locust, in the bagpipe of the tree-toad, in the cymbals of the cacan only a means suitable to expressing the joy of living, the universal joy which each animal species celebrates in its own fashion.¹ Why then is the female mute? It is certainly absurd

¹ *Souvenirs entomologiques*, Vol. V, p. 256.

The Natural Philosophy of Love

and profoundly useless to summon, in almost uninterrupted song from morn till eve, a companion whom one sees seated beside one pumping the juice out of a plane-tree ; but perhaps it has not always been so. The two sexes may have had, in the past, habits more divergent. The plane-tree which unites them in the same feeding-ground has not always grown in Provence. The unending song may have been useful at a time when the sexes lived separate, and may have remained as evidence of ancient customs. It is, indeed, a commonly observed fact that activities long survive the period of their utility. Man and all animals are full of maniac gestures whose movement is only explicable on the hypothesis that it had once a different intention.

The female spider is nearly always superior to the male in size, industry, activity, and means of defence and attack. We will note their sexual habits later, but must observe here their particular cases of dimorphism. The Madagascar epeira is enormous, very handsome, black, red, silver and gold. She rigs up a formidable web in her tree, near which one sees always a modest and puerile skein, the work of a minuscule male keeping an anxious eye on the chance of sidling up to his terrible mistress, and risking his wedding-death. The water-spider returns the balance to the male, who is fatter, larger, and provided with longer limbs.

The male triumphs again, and more frequently, among coleoptera. The nasicorn scarab, so called most aptly because he carries on his head a long black-bending arched horn, has all his chest solidly armoured ; the female has neither horn nor cuirass. Everyone knows the flying-stag or lucanus (stag-beetle, bull-fly), an enormous coleoptera which flies through the summer evening buzzing like a top. He is feared for the bold appearance of his long mandibles which branch like stag's horns and which

Sexual Dimorphism

the uninstructed take for dangerous pincers. He is the male, his war-gear pure ornament, as he lives inoffensively by sucking tree-sap. The much smaller females are devoid of warlike apparatus, they are very few in number, and it is in the excitement of searching for them that the male, whose life is short and who knows it, whirls like a maniac, and bangs himself into our trembling ears. Here again one divines animals who have changed their habits more quickly than their organs. The old pirate has kept his daggers and axes, but abandoned, no one knows why, to vegetarian diet he has lost all power to use them, he is merely a stage-super. Perhaps this gear impresses the female? She cedes more willingly to this hector who gives her the illusion of strength, that is of the male's beauty.

The glow-worm is a real worm, but a larva rather than a definitive animal. The male of this female is a perfect insect, provided with wings which he uses to seek in the darkness the female who shines more brightly as she more desires to be looked at and mounted. There is a kind of lampyrism of which both sexes are equally phosphorescent, the male in the air, the female on the ground where she awaits him. After coupling they fade as lamps when extinguished. This luminosity is, evidently, of an interest purely sexual. When the female sees the small flying star descend toward her, she gathers her wits, and prepares for the hypocritical defence common to all her sex, she plays the belle and the bashful, exults in fear, trembles in joy. The fading light is symbolic of the destiny of nearly all insects, and of many animals also; coupling accomplished, their reason for being disappears and life vanishes from them.

The male cochineal has a long body with very delicate transparent wings, which at a distance look like those of a bee; he is provided with a sort of tail formed of two silky strands. One sees him flying over the nopals, then suddenly alighting on

The Natural Philosophy of Love

a female, who resembles a fat wood-louse, round and puffy, twice as stout as the male, and wingless. Glued by her feet to a branch, with her proboscis stuck into it, continually pumping sap, she looks like a fruit, like an oak-apple or oak-gall on a peduncle, for which reason Réaumur called her picturesquely the gall-insect. In certain species of coccidæ the male is so small that his proportion is that of an ant strolling over a peach. His goings and comings are like those of an ant hunting for a soft spot to bite, but he is seeking the genital cleft, and having found it, often after long and anxious explorations, he fulfils his function, falls off and dies.

Chapter 5

Sexual Dimorphism (II)

Vertebrates : Unnoticeable in fish, saurians, reptiles—The bird world—Dimorphism favourable to males : the oriole, pheasants, the ruff—Peacocks and turkey-cocks—Birds of paradise—Moderate dimorphism of mammifers—Effects of castration on dimorphism.

VERTEBRATES.—Sexual differences are generally unnoticeable in fish, reptiles and saurians. They are accentuated when we come to superior vertebrates, to birds and mammals, but without ever attaining the extreme difference which characterizes a great number of arthropoda. In birds the disparity may be of colouring, size, or length, form and curliness of the feathers ; among mammals, of shape, hair, beard or horns. Sometimes the female bird is finer and stronger ; stronger and of more powerful wing-spread in the case of the secretary-bird, the buzzard, the falcon, the ash-coloured vulture and many birds of prey ; more beautiful as in the Indian turnicidæ.¹ One of them, the grey phalarope, solves woman's dream in favour of the female, by leaving her the brilliant colours ; the male contents himself with more sober clothing and, not being able to lay, assumes at least the further maternal care of sitting on the eggs.

In general, nature is, in the bird world, favourable to the male. He is a prince whose wife appears morganatic. Often smaller, as the female lesser-bustard, while the female garden-warbler is nearly always clothed as Cinderella. The birds which

¹ Bird rather like the quail.

The Natural Philosophy of Love

women have massacred in millions in order to deck themselves as parrots and jays, are male birds for the most part ; their sisters bear more modest clothing, and one would say that this humility, become favourable to their species, had been developed by nature in provision of human stupidity and bad-heartedness. The gold-yellow oriole with black wings and tail, has for mate a brown sparrow with grey and greenish touches. The Silver Pheasant (a false pheasant) has a black tuft standing up from his silver-white nape, his neck and back are of the same metal ; his dark belly has a blue shimmer, his beak is blue, his cheeks red, and his feet red. The smaller female covers her belly sadly in a whitish chemise, her back is russet. In the true pheasant the dimorphism is still more marked. The large, proud male (we are dealing with the common pheasant) who has no objection to being admired, is deep green on nape and neck, copper-red with violet shimmer on back, flanks, belly and breast ; his tail russet with black bands, a reddish brown tuft spreads from his head, and the eye-circle is vivid red. The much smaller female has an earthy plumage speckled with black. The fair Golden Pheasant is really all golden over green. His yellow tail and wings and his saffron red belly complete this marvellous masculine splendour. The female must content herself with burnt sienna back-covering which comes down on to her ochre-coloured belly.

A little head projecting from an enormous neck-circle of white puffed out feathers, middle-sized body, and long legs, characterizes the combatant ruff (*Pavoncella pugnax*). One must add a tapering beak, ornamented at the base with a sort of red grape. One cannot say what colour the male is, he is of all colours. One leaves him white, and finds him red ; he was black, and is violet ; later he will be speckled or banded in most varied hues. His ruff is an ornament and a defence ; he loses

Sexual Dimorphism

both it and his red grape with the passing of his fighting and loving season. This instability of feathering accords curiously with the instability of his character ; no animal is more irritable or cantankerous. One cannot keep him captive save solitary and in obscurity. The female, somewhat less turbulent, never changes her vestment, an invariable grey, with a small amount of brown on the back.

Peacocks and turkey-cocks alone can spread wheel-wise their fan-tails, as also the cock bustard ; they alone are provided with great wattles. The menura-hen lifts, like the cock, a lyre of feathers, but it is a tarnished and mediocre imitation of her master's, which glistens in all shades rising and curving with such paradoxical grace.

The dimorphism of birds of paradise is even more marked than in the preceding cases. Nape citron-yellow, throat green, forehead black, back in burnt chestnut, the cock's tail has two long plumes, his flanks two fine tapering feathers of yellow-orange marked in red, which he can spread branching or draw in at will ; the dim female is without ornament. The sifilet, a bird related to the birds of paradise, has, fixed between eye and ear, a pair of fine plumes twice the length of his body, which float as he walks like white blue-shimmering streamers. It is a lover's paraphernalia, which the female in consequence does without, while the male loses his after mating.

The dissemblance of barnyard cock and hen are well enough known to give everyone a clear idea of dimorphism in birds and to show difference of characters parallel with difference of form.

The dimorphism of mammals is even less often favourable to the female than is that of birds. One can cite but the sole example of the American tapir where the male is smaller than the female. The contrary is nearly always the case. Sometimes the two sexes have an identical appearance : cougars, cats,

The Natural Philosophy of Love

panthers, servals. If there is a rule, it is difficult to formulate, for side by side with these felines without sexual dimorphism, the sex of lions and tigers clearly determines their forms.

Among mammals there are bizarre resemblances and baroque differences. The male and female mole, at first sight, appear the same even to their exterior sexual organs, the female's clitoris is, like the male's penis, perforated to let the urethra pass through it. But here, as we shall see later, the morphological resemblance by no means indicates similarity of characters; the female mole is excessively female. There is baroque difference of sexes in the capped seal of Greenland and Newfoundland. The male can puff out his head-skin into an enormous helmet. To what purpose? Possibly to scare naïve enemies. True to her rôle of protégé the female cannot emulate this bluff, which is similarly used by Chinese warriors, by certain insects like the mantis and by the cobra among serpents.

Among brown bears and kangaroos the females are smaller than males. In all the deer tribes save reindeer the male alone is horned, and this is the very plausible origin of a very old joke, for the does are lascivious and are pleased to receive the attentions of a number of males. The difference of bull and cow is distinct enough, that of stallion and mare less so, diminishing still further between dog and bitch, and being almost nil among cats. In all cases where the dimorphism is slight, and is the direct consequence of the possession of sexual organs, castration inclines the male toward the female type.¹ This is as apparent in cattle as in eunuchs or gelded horses. One may see in this yet another proof of the primitivity of the female, since the abstraction of testicles suffices to give the male that softness of form

¹ Castration of females seems, at least, among human beings, to bring them nearer the male type. Effects of castration vary, necessarily, according to the age of the subject.

Sexual Dimorphism

and character which typifies females. Masculinity is an augmentation, an aggravation of the normal type represented by femininity ; it is a progress, and in this sense it is a development. But this reasoning, good for mammals, would be detestable among insects, where the accentuation of type is nearly always furnished by the female. There are no general laws in nature, unless they be those which regulate all matter. With the birth of life, the unique tendency diverges at once upon multiple lines. Perhaps we must throw this point of divergence still further back, for a metal like radium seems to differ from other metals as much as an hymenopter from a gasteropod.

Chapter 6

Sexual Dimorphism (III)

Vertebrates (continued): Man and woman—Characteristics and limits of human dimorphism—Effects of civilization—Psychological dimorphism—The insect world and the human—Modern dimorphism, basis of the pair—Solidarity of the human pair—Dimorphism and polygamy—The pair favours the female—Sexual æsthetics—Causes of the superiority of feminine beauty.

VERTEBRATES (*continued*)—Among the primates sexual dimorphism is only very slightly accentuated, especially when the male and female live the same life in the open air and share the same labours. The male gorilla, very strong and very pig-headed, flees from no enemy; the female on the contrary is almost timid: when surprised in company with the male she cries out, gives the alarm and escapes. But attacked when alone with her offspring, she resists. One can easily distinguish the male and female orang-outang, the male is larger with longer more bristling hair, he alone has a beard; in the female the patches of bald skin are much less callous. But the great difference between the sexes in gorilla and orang-outang is in the males having vocal sacks descending over the chest to the armpits.

Thanks to these air-reservoirs, these bagpipe bags, inflatable at will, the male can howl for a very long time and with great violence; the females' sacks are very small. Other monkeys, notably howling apes, are provided with these air-chambers, as are also certain other mammals well known for the

Sexual Dimorphism

extravagance of their cries—polecats and pigs. Birds and batrachians have analogous organs.

Dimorphism of men and women varies according to race or rather according to species. Very feeble in most blacks and reds it is accentuated among Semites, Aryans, and Finns. But in man, as in all animals of separate sexes, one must differentiate between the primary dimorphism which is necessary and produced by the specialization of sexual organs, and the secondary dimorphism with which the relation of sex is less evident or wholly uncertain. Limited to the non-sexual elements, human dimorphism is very feeble. Almost nil in infancy, it develops with approaching puberty, is maintained during the genital period, and diminishes, sometimes almost to vanishing point, in old age. It varies individually, even during the years of greatest reproductivity, in males feebly sexed and in women heavily sexed: that is to say there are men and women whose type closely approaches the type-ideal formed by the fusion of sexes; neither one nor the other escapes the radical dimorphism imposed by the difference of sexual organs.

Leaving aside exceptions, one observes a mediocre and constant dimorphism between men and women, which may be expressed as follows, taking the male for type: the female is smaller and has less muscular force, she has longer head hair, but in contrast the hair-system is very little developed over the rest of her body, excepting in the armpits and pubic regions; apart from the teats, belly and hips, whose form is sexual, she is normally fatter than the male, and in direct consequence of this, her skin is finer; her skull-capacity is inferior by about 15 per cent (man=100; woman=85) and her intelligence, less spontaneous, inclines in general to activities entirely practical. There is hardly any difference in the male and female skulls of every inferior human species, the contrary is true of civilized

The Natural Philosophy of Love

racés. Civilization has certainly accentuated the initial dimorphism of man and woman—at least unless one of the very conditions of civilization be not precisely a notable difference, morphological and psychological, between the two sexes. In that case civilization has but accentuated a native dimorphism. This is more probable, for one does not see how civilization could have caused the dimorphism, not at least unless it had already existed as a very strong tendency. Identical work, the same utilization of instinctive activities have managed greatly to reduce dimorphism of forms, for example, in dogs and horses, but this has had no influence on the psychological dimorphism. Cultivation of instinct has never been able to efface, in the most specialized breeds of dogs, the peculiar tonality which instinct receives from sex. It is improbable that intellectual culture could fashion women in such a way as to rid them of the characteristic colour which sex imparts to their intelligence.

One uses the words instinct and intelligence to flatter prejudiced people. Instinct is merely a mode of intelligence.

Dimorphism is a constant fact in the animal series. Favourable to the male and to the female indifferently, it starts always from sexual necessity. There is a job to be done: nature divides it equally, or not, between male and female. She knows neither justice nor equality, and lays heavy burdens upon some, even to mutilation and premature death, while she gives to others liberty, leisure, and long hours of pleasant life. It is necessary that the couple reproduce a certain number of beings, equals of the unities of which itself is formed: all means are good which attain this end, and which attain it most speedily and most surely. Nature who is pitiless, is also in a hurry. Her imagination, always active, invents ceaselessly new forms which she casts into life, in measure as the earlier born finish their cycle. In superior mammals, and particularly in the human species,

Sexual Dimorphism

division of labour is the means used by nature to insure the perpetuity of types. The female insect (leaving aside for the moment social hymenoptera) is provided at once with the organs of her sex and with tools of her trade, with arms for guarding the race ; the female human has ceded to man the tools and weapons merged in the one instrument, muscle. Or rather, keeping her rights to the instrument, she gives up the use of it. She is neither warrior, huntress, mason, nor butcher ; she is the female, and the male is the rest. The division of labour supposes community. In order that the female may cede the cares for subsistence and defence to the male, the couple must be established and permanent. The male osmie (a sort of solitary bee) sees the light before his female ; he could prepare the nest, or at least choose its situation, guide the female to it, work or watch ; but he belongs to a series of animals in which the males are merely male organs, and all his rôle is contained in the gestures of mating. The couple is not yet formed. When it is formed, as in other kinds of insects, the scarab, copris, sisyph, geotrupe, the work is equally shared between the two sexes. Here the parallel ends, for the social evolution of the insect has led to functional differentiations extremely complicated, and if not unknown, at least abnormal, to humanity. Bee society has the female for its base, human society has the couple. They are organisms so different that no comparison of them is possible, or even useful. Only in ignorance of them, can one envy bees ; a community without sexual relations is really without attraction for a member of the human community. The hive is not a society but a hatchery.

The couple is only possible with a dimorphism, real but moderate. There must be a difference, especially of strength, in order that there may be a true union, that is to say subordination. A couple formed of equal elements, like a society of equal

The Natural Philosophy of Love

elements, would be in a state of permanent anarchy; two creatures suffice for anarchy, as for war. A couple formed of elements too unequal, would, by the crushing of the weaker, find itself reduced to tyrannized unity. Man and woman, as is the case with other primates and the carnivora (for most herbivora are polygamous) represent two sexes made to live united and to share jointly in the cares for their offspring. The state of couple, demanding a certain dimorphism, assures thereby its perpetuity. When the couple is dissolved, be it by polygamy or by promiscuity, as has happened among Mohammedans, and among Christians (a long powerful religion functions both as race and as milieu), the dimorphism is accentuated, each of the elements escapes, in some measure, the strict influence of the other sex. Likewise if, in consequence of identical education, the psychological dimorphism is attenuated, even slightly—it never is attenuated more than slightly—or if physical games reduce a little the physical differences, the couple is less easily formed and grows less stable: hence adultery, divorces, excess of prostitution. In all monogamous societies, prostitution is the strict consequence: it diminishes more or less in polygamous societies where the free women are rarer, it would only disappear completely in promiscuity, that is to say in universal prostitution.

Polygamy, apart from its indirect influence, has, by the internment of women, a direct influence on the dimorphism. Set apart from the active life of the outer world, and even from the air and light, the female of the male polygamous human animal becomes whiter, whatever may have been her initial colour, fatter, heavier, and also more stupid and more addicted to all sorts of onanism. Among Indian Mussulmans the man and woman appear to belong to different species, the man being so tanned, and the woman so colourless. Prostitutes of the

Sexual Dimorphism

Occident whose life is often spent indoors also lose colour, and one would with difficulty recognize as sisters the soft, bleached whore and the sun-reddened, hardy farm-girl. Woman's liberty also accentuates the dimorphism but by another process. Freed from the bridle of necessity, from the need of pleasing, woman escaped from the couple, exaggerates her feminism and becomes again the female in excess, since it is in being more and more female that she has most chances of seducing the male, who is insensible to all other merit. And, inversely, a woman having man's education is, given equal beauty, less than any other of her sex a seductress.

Thus, while the disintegration of the couple augments the feminine dimorphism, the diminution of the natural dimorphism renders the transformation of the couple more uneasy and more precarious. The human couple is a harmony difficult to realize, very easy to destroy, but in measure as one destroys it one frees the elements which will, necessarily, re-create it. (We will return later to polygamy, human and animal ; but must here examine its relation to dimorphism. All the questions treated in this book are, moreover, so interlocked, that it will be difficult to prevent one or other of them from cropping up. If the method is less clear it is perhaps more logical. Far from wishing to impart human logic to nature, one attempts here to introduce a little natural logic into the old classic logic.)

The sole aim of the couple is to free the female from all care that is not purely sexual, to permit her the most perfect accomplishment of her most important function. The couple favours the female, but it favours also the race. It is fully beneficial when the woman has acquired the right of maternal laziness. There is another reason for believing in the legitimacy of such a sharing of useful work between the two members of the couple ; it is that masculine work diminishes femininity, while feminine

The Natural Philosophy of Love

work feminizes the males. In order that the necessary and moderate dimorphism persist, it would be essential, if the woman is to take up male exercises, that the male should assume all the accessory labours of maternity. This would not be contrary to supple natural logic ; there are examples of it among batrachians and among birds. But one does not see clearly either the utility or the possibility of such a reversal of rôles in the human species. The duty of a being is to persevere in its being and even to augment the characteristics which specialize it. The duty of woman is to keep and to accentuate her æsthetic and her psychologic dimorphism. The æsthetic view-point obliges one for the thousandth time to put, but happily not to resolve, the agreeable question of woman's beauty. One may judge when it is a matter of shape, of muscular energy, of respiratory amplitude : these can be measured and set down in figures. When it comes to beauty, it is a matter of feeling, that is to say of what is at once deepest and most personal in each of us, and which is most variable between one man and another. However, the sexual element which enters into the idea of beauty being here at its very root, since it is the question of woman, the opinion of men is nearly unanimous : in the human couple it is woman who represents beauty. All contrary opinion will be for ever considered as a paradox or as the most boring of sexual aberrations. A feeling does not adduce its reasons, it has none, it has to have them lent to it. The superiority of feminine beauty is real, it has a sole cause, the unity of line. What makes woman the more beautiful is the invisibility of her genital organs. The male organ, which is sometimes an advantage, is always a load and always a blemish ; it is made for the race, not for the individual. In the male human, and precisely because of his erect attitude, the sex is the sensitive point *par excellence*, as well as the visible point ; it is the point of attack in hand to

Sexual Dimorphism

hand struggle, an obstacle to catch the eye, be it as a roughness of surface, be it as a break in the middle of the line. The harmony of the female body is then geometrically much more perfect, especially if one consider the male and the female at the very hour of desire, at the moment, that is, when they present the most intense and most natural expression of life. In the woman all movements are interior, or visible only in the undulation of her curves, conserving thus her full æsthetic value, while the man, seeming at once to recede toward the primitive states of animality, appears reduced, putting off all beauty, to the bare and simple condition of genital organ. Man, it is true, has his æsthetic compensation during pregnancy and its deformations.

One must admit also that the human form has grave defects of proportion, and that they are more accentuated in the female than in the male. In general, the trunk is too long and the legs, consequently, too short. One says that there are two æsthetic types in Aryan races : one with long limbs and one with short limbs. Both types are, indeed, easy enough to distinguish, but they rarely present their characteristics with sufficient distinction, moreover the first is rather rare : it is the one which sculptors have vulgarized by amelioration. Compare a series of photographs of art with those from the nude, and you have proof enough that the beauty of the human body is an ideological creation. Take away the egoistic sentiment of the race, and the sexual delirium, and man would appear very inferior in harmonic plentitude to most of the mammals ; his brother, the monkey, is frankly inæsthetic.

Chapter 7

Sexual Dimorphism and Feminism

Inferiority and superiority of the female as shown in animal species—Influence of feeding on the production of sexes—The female would have sufficed—Feminism absolute, and moderate—Pipe-dreams : elimination of the male and human parthenogenesis.

ONLY after serious study of sexual dimorphism in the animal series may one venture a few reflections on feminism. One has noticed in certain species the female more beautiful, stronger, more active, more intelligent ; and one has noticed the opposite. One has seen the male larger, or smaller ; one has seen and will see him parasite, or provider, permanent master of the couple or the group, fugitive lover, a slave sacrificed by the female after the completion of her pleasure. All attitudes, and the same ones, are attributed by nature to either of the sexes ; there is not, apart from the specific functions, a male or a female rôle. Both or either according to the decalogue of their species put on the same costume, don the same mask, wield the same boar-spear, tool or sabre without it being possible to discover, at least not without going back to the beginning of things and digesting the archives of life, which of them is disguised and which acts " according to nature."

The abundance of food, especially nitrogenized, will produce a greater number of females. With certain animals at transformation one may act directly on individuals : tadpoles gorged on mixed food, vegetables, larvæ, chopped meat, have given an excess of females approaching totality (95 females to 5 males). On

Sexual Dimorphism and Feminism

the other hand over-feeding tends to abolish Stamens in plants, the Stamens turn into petals, over-alimentation even moults the petals into leaves and the buds into shoots. Richness of means, well-being, intensive feeding, all abolish sex, but the last to be affected is the female, which, in sum, perseveres obscurely in the unsexed plant, forced back to its primitive means of reproduction, or to reproduction by slip cutting. If excessive alimentation tends to suppress the male, it would then appear that the separation into two sexes is a means of diminishing the costs of the total being. The monoic type is a step toward this simplification of labour; the female at a given moment eliminates her male organ, refuses to feed it, frees herself from the burden which has only a momentary utility. And, following this, provided in herself with an overabundance of all that maintains life, she divests herself of the specialized sexual apparatus, unsexes herself, that is to say; the identity of contraries being here evident, she is sexed throughout all her parts: *tota femina sexus*.

The male is an accident: the female would have sufficed. Brilliant as are the destinies of the male in certain animal species, the female is primordial. In civilized humanity she is born in proportion greater as the civilization approaches a greater plenitude; and this very plenitude diminishes, proportionately, the general fecundity: whether we treat of man or of apple-trees, the male element increases or decreases according to famine or abundance of nourishment. But the human race is not sufficiently plastic for the variation of births to be ever very great between the two sexes; and no warm-blooded animal is sufficiently plastic for this cause, so active among vegetables, ever to lead to the dissolution of the male. There are no natural laws, there are tendencies, there are limits: the fields of oscillation are determined by the pasts of species,

The Natural Philosophy of Love

trenches curving into cloisters which close, in nearly all directions, the alleys of the future.

It is a fact henceforth hereditary, that the male of the human species has centralized in himself most of the activities independent of the sexual motor. He alone is capable of disinterested works, that is to say of aims which are unconnected with the physical conservation of the race, but without which civilization would be impossible, or at least very different from what it is and from the idea which we have of its future. Doubtless in humanity, as in the rest of nature, the female represents the important sex. In utter need, as with the mason-bee, she could serve for the absolute necessary work, to build the shelter, to gather the food, and the male might, without essential damage, be reduced to the rôle of mere fecundating apparatus. The number of males could, and even should in such case, diminish with due rapidity, but then human society would incline or decline toward the type represented by that of social bees: continual labour being incompatible with the periods of maternity, the feminine sex would atrophy, a single female would be elevated to the dignity of queen and mother, the rest of the population would work stupidly for an ideal exterior to its own sensibility. Even more radical transformations would not be anti-natural. Virgin-birth might establish itself: certain males could be born in each century, as happens in the intellectual order, and they could fecundate the generation of loins, as genius fecundates the generation of minds. But humanity, by the richness of its intelligence, is less than other animal species submitted to causal necessity; by constant squirming in its nets, it has managed to displace a cord here and there, and makes now and again the unexpected movement. The coming of males once in a century would be unnecessary if some mechanical device were found for exciting the life of woman's eggs, as

Sexual Dimorphism and Feminism

one excites those of the sea-anemone. If a few males were born from time to time, by an atavistic quirk of nature, they could be exhibited as curiosities, as we now exhibit hermaphrodites.

The feminist ideal leads us to these fantasies. But if it comes to destroying the couple and not to re-forming it, if it comes to establishing a vast social promiscuity, if feminism resolves itself into the formula of free-woman in free-love, it is even more chimerical than all the chimeras which have at least their analogy in the diversity of animal habits. Human parthenogenesis is less absurd: it offers an order, and promiscuity is a disorder. But social promiscuity is impossible by the further reason that woman, the more feeble, would be crushed by it. She struggles against man only, thanks to the privileges which man concedes her when troubled by sexual inebriety, intoxicated and drowsy with the fumes of desire. The factitious equality which she claims would re-establish her ancient slavery on the day when most or all women wish to enjoy it: that is still another possible solution of the feminist crisis. However one looks at it, one sees the human couple re-establish itself ineluctably.

It is very difficult, from the standpoint of natural logic, to sympathize with moderate feminism, one could more easily accept feminism in excess. For if there are in nature numerous examples of feminism, there are very few of an equality of the sexes.

Chapter 8

Love-Organs

Sexual dimorphism and parallelism—Sexual organs of man and of woman—Constancy of sexual parallelism in the animal series—External sexual organs of placental mammifera—Form and position of the penis—The penial bone—The clitoris—The vagina—The teats—Forked prong of marsupials—Sexual organs of reptiles—Fish and birds with a penial organ—Genital organs of arthropods—Attempt to classify animals according to the disposition, presence, and absence of exterior organs for reproduction.

SEXUAL dimorphism, physical as well as psychical, has evidently one sole cause, sex; nevertheless the organs which differ least from male and female among species which differ most, are precisely the sexual organs. That is, they are rigorously made the one for the other, and the accord in this case must be not only harmonic, but mechanical and mathematical. They are cog-wheels which must bite one on the other with exactitude, be it, as in birds, that there is but an exact superposition of two orifices, be it, as in mammals, that the key must enter the keyhole. There is a dimorphism, but it is that of the mould to the cast, of the scabbard to the blade; for the parts where the contact is less strict, the parallelism is nevertheless quite sensible and quite apparent. This similitude in difference has struck philosophers as well as anatomists in all ages from the logical insinuations of Aristotle to Geoffroy Saint-Hilaire's theory of analogies. Galen had already noted certain analogies, more or less exact: greater labia, and foreskin, ovaries and testicles, scrotum and matrix. He says, textually: "All

Love-Organs

parts of man are found in woman ; there is but one point of difference, woman's parts are interior, man's exterior, parting from the perineal region. Imagine those which first present themselves to mind, no matter which, unfold woman's or fold man's inward and you will find either a replica of the other. Suppose, first, man's organs pushed into him and extending interiorly between the rectum and the bladder ; in this supposition the scrotum would occupy the place of the matrix, with the testicles placed at each side of the exterior orifice. The prong of the male would become the throat of the cavity thus produced, and the skin of the prong's extremity, called the foreskin, would form the vagina. Suppose, inversely, that the matrix should turn inside out and fall outside, would not its testicles (ovaries), of necessity, find themselves inside its cavity and would not it envelop them as a scrotum ? Would not the throat, hidden up to the perineum, become the male member, and the vagina, which is but a cutaneous appendix of the throat, the foreskin ? " This is the passage which Diderot has transposed and put *au courant* with science in his *Rêve d'Alembert*. This page of literary anatomy retains its expressive value : " Woman has all man's parts, the sole difference is like that between a purse hanging outside and a purse stuffed inside ; a female fœtus so resembles a male fœtus, as to deceive anyone ; the part which occasions the error, sinks in the female fœtus in measure as the purse extends inward ; it is never obliterated to the point of losing its primitive form ; it also is the mover of pleasure, it has its gland, its foreskin, and one notes at its extremity a point which appears to have been the orifice of a urinary canal which has closed ; there is in man from the anus to the scrotum, the interval called the perineum, and from the scrotum to the end of the prong, a seam which looks like the resewing of a basted vulva ; women

The Natural Philosophy of Love

in whom the clitoris is excessive have beards (eunuchs have not), their thighs increase, their hips widen, their knees round out, and in losing the characteristic organization of one sex they seem to return to the characteristic conformity of the other . . ."

In terms less literary, one considers as homologous in man and woman, the ovary and the testicle, lesser labia, clitoridian cap and sheath, the hanging foreskin; the greater labia and the envelope of the scrotum; clitoris and penis; the vagina and the prostatic utricle. The details of these analogies will be found in special works, they cannot be given here with scientific precision. The sole point to hold on to is that the two sexes not only in man, and not only in mammals, but in nearly all the animal and vegetable series, are but a repetition of the same creature with specialization of function. This specialization may extend to functions other than sexual, to work (bees, ants), to war (termites). The soldier termite is extraordinary; he is not more so than the male.

The sexual parallelism is constant among nearly all vertebrates and arthropods; it extends to identity among hermaphrodite molluscs if one then compare not two sexes but two individuals. It extends, for each sex considered separately, along the whole zoological chain. Parting from link animals which separate into two parts, one sees the sexual organs design themselves in the form wherein they arrive in higher animals of great complexity, so that, in acquiring differences of form and position, they retain a remarkable stability of structure; one would say almost of identity in marsupials, reptiles, fish, birds. For clarity one must proceed from the known to the unknown; man is the figure to whom may be compared necessarily the observations on other animals.

There is no lack of point in knowing the normal love-mechanism, since moralists pretend to regulate its movements.

Love-Organs

Ignorance is tyrannical ; the inventors of natural ethics knew very little of nature : this permitted them to be severe ; for no definite piece of knowledge interfered with the certitude of their gestures. One becomes more discreet when one contemplates the prodigious picture of the erotic habits of the animal world, and even entirely incompetent to decide flatly whether a fact is natural or unnatural.

Man is a placentary mammifer : by this title his genital organs and their mode of employ are common to him and to all hairy animals having teats and an umbilicus. He is not normally covered all over with hair, but there is hardly a spot on his body where hairs may not sprout, and both sexes are hairy, often with extreme abundance, in the pubic region and armpits. The male and active organ of mammifers is the penis, usually completed exteriorly by the testicles. The penis is, at once, the excreting conductor of urine and sperm ; an analogous relation exists in the female, and it is with exactitude that these mingled organs have been called genito-urinary or, more recently, uro-genital ; it is the same in all the animal series, the urethra opens exteriorly or it ends, as in birds, in a cloaca or vestibule for all the excretions.

The penis of two-handed (bimanous) creatures descends freely, it hangs before the pubes in quadrumanes, and in chiropters (bats). The bat is strangely like man, and primates in general : five fingers to the hand, one a thumb, five toes on the foot, pectoral teats, menstrual flux, free penis ; it is a little caricature of man, abrupt and frightened in its evening flight about houses. Among flesh-eaters, ruminants, pachyderms, solipeds and several other families of mammals, the penis is sheathed in a scabbard which stretches along the belly ; thus preserved against accidents and insect stings, its sensibility is maintained intact. Voyagers, according to Buffon, have seen

The Natural Philosophy of Love

Patagonians trying to get like results by tying the foreskin above the gland, like a bag with a cord. Thus man's hand permits him to improve or mutilate his body. Mutilation and sexual deformations, circumcision among Semites and savages, excision of Russian illuminati, transversal perforation of the gland, surgical flattening of the prong, are very frequent. The hand of the chiropter is shackled, that of quadrumanes has only one sexual rôle, masturbation. It may also serve as a shield against external danger; many quadrumanes, better protected, make the same use of their tail when they curl it between their legs; this is sometimes a psychological gesture expressing female modesty or refusal, sometimes a gesture of preservation. The modest attitude of Venus, of man coming naked from his bath, have no other origin. Monkeys when they stop moving about, place their hands on their sexual parts. Before Christianity the Polynesians had the custom, when standing upright, of holding the scrotum in both hands with the prong hanging between the fingers: the posture of the wild dandy. Certain species lack scrotum as Pliny had already remarked: *Testes elephanto occulti*. In camels the testicles roll beneath the skin of the groin; rats' testicles are internal, but emerge in the rutting season and assume an enormous development. Apes often have the pouch-skin blue, red or green, like the other bald parts of their bodies.

Camels, dromedaries and cats have the end of the penis bent backward (this explains the tom cat's manner of urination), the tip does not straighten itself or point forward save in erection. Not only the prong but the sheath of rodents points backward and ends near the anus, and in front of it. The penis is slender in ruminants, and in wild boar; thick and round in solipeds, elephant, lamantin (sea-cow, manatee); thick and conic in the dolphin, cylindrical in rodents and primates. The gland, which takes all intermediary forms between ball and point, has in the

Love-Organs

rhinoceros the shape of a gross fleur-de-lis. In the cats small spikes rise and point toward the base, and in agouti and jerboa there are holding flanges which grip the organs of the female.

The prong of many mammals, a real member, is held up by an interior bone, formed at the cost of the conjunctive partition which separates the two hollow chambers. This penial bone is found in many quadrumanes, chimpanzees, orang-outangs, most of the carnivora, dogs, wolves, felines, martin, otter, badger; among rodents, beaver, seal, and cetaceous animals; it is lacking in ruminants, pachyderms, insectivora, toothless animals. In man one sometimes finds a trace of it in the form of a slender prismatic cartilage. In the enormous penis of the whale it resembles a bell-clapper. The penial bone diminishes the erectile capacity of the prong in stopping the development of the hollow chambers, but it assures the rigidity of the member, obtained in other penial types by the inflow of blood which causes the swelling. Man ought to have the penial bone; he has lost it in the course of ages, and this is doubtless fortunate, for a permanent rigidity, or one too easily obtained, would have increased to madness the salacity of his species. It is perhaps for this reason that great apes are rare, although they are strong and agile. This view would be confirmed if the penial cartilage were found regularly in very lustful men or with a certain frequency among human races most addicted to eroticism.

The penis is found in woman in the form of the clitoris. This is almost as voluminous as a true penis in quadrumanes; it is atrophied in other species. It varies individually in women, certain of them being in this respect quadrumanes. Sometimes the clitoris is pierced for the passage of the urethra (certain apes and the mole); a slight trace of this meatus is seen at the head of the woman's clitoris. In species whose males possess a penial bone the female has often a clitoridian bone; nothing

The Natural Philosophy of Love

more clearly affirms the parallelism of these two organs, whereof one serves only for pleasure, after having been, perhaps in a long distant era when man romped among marine invertebrates, a real instrument of fecundation. The greater labia, limiting the general orifice of the vulva, exist only in woman and less markedly in the female orang-outang. Circular in rodents, transversal in the unique case of the hyena, which is a heteroclite animal, the vulva is longitudinal in all other mammals. Completely imperforate in the mole, the vagina is more or less closed by a membrane which the male penis tears in first encounter in women and several quadrumanes, certain small monkeys, the maromset, certain of the carnivora, the bear, hyena, white-bellied seal, the daman (nailed); it is replaced in dog, cat, and ruminants by an annular gripping between the vagina and the vestibule. The maidenhead is, therefore, not peculiar to human virgins, and there is no glory in a privilege which one shares with the marmoset.

Menstruation is found in quadrumanes, in bats; other female mammals show an emission of blood, limited, however, to the rutting season. The position of teats is variable, as also their number, they are in the groin in ruminants, solipeds, cetacea; ventral in dogs, pigs; pectoral and always two in nearly all primates, chiropters, elephants, and sirenians, who for this reason, doubtless, reminded sailors of the ancient world of their women.

Other particularities and correspondences are examined in the next chapter which deals with the mechanism of love, and the method used by divers animals to make use of their organs according to the commandment of nature. There remain for consideration the lesser mammals and other vertebrates whose fecundatory instruments resemble those of mammals.

In man and others of the placentalia, the forked prong is a

Love-Organs

teratological fact only encountered in incomplete double monsters. It is, on the contrary, the most general form among marsupials. A double vagina corresponds to this penis, double at least from the gland, as in kangaroo and opossum. This original biparity is found regularly in the uterus of certain placentaries, hares, rats, bats, carnivores. The uterus of marsupials is simple, without narrowing of the throat. One knows that their young stay there but a short time, that they are born not as foetuses but as germs, and complete their development in the marsupial pouch. An opossum, destined to attain about the size of a cat, is at birth about bean-size. These animals, therefore, differ profoundly from other mammifers.

Some reptiles, like crocodiles and most chelonians, have only a simple prong; some tortoises have a forked tip to the penis, it is many-branched in the trionyx, a carnivorous tortoise rightly called ferocious. The saurians and ophidians can deploy outside the cloaca two erectile prongs; in saurians (lizards), they are short, round and bristle with prickles. The female has no clitoris save when the male has a single prong; at least the clitoris is only well constituted in crocodilians and chelonians.

Copulation is unknown to batrachians, whose contact is nevertheless very close; it is unknown to most fish, whose amours are without even contact. Certain selacians, however (dog-fish, skates), and perhaps also one or two teleostians (bony fish), and the lamprey, have a copulating organ which really enters the organ of the female.

Birds which have a penis or an erectile and retractile tubercle which serves as such are the ostrich, cassowary, duck, swan, goose, the bustard, mandou and certain neighbouring species; their hens have a clitoridian organ. The ostrich has a true prong, five or six inches in length, cut by a groove which serves as conduit for the seminal liquor; it is enormous in erection and

The Natural Philosophy of Love

tongue-shaped. The ostrich hen has a clitoris and coition occurs exactly as among mammals. The swan and duck are also very well provided with an erectile tubercle suited for copulation, and this explains at once the story of Leda, the libidinous reputation of the duck, and his exploits in the barn-yards, veritable abbeys of Thélème.

It is impossible to describe here the copulative organs of arthropods, comprising insects properly so-called. Enough to note that however varied their forms they behave very much as those of superior mammals and are composed of two essential parts, the penis, sheathed in a penial scabbard, and the vagina, prolonged by the copulative pouch which receives the penis. Fish and birds, lacking external apparatus, are reduced to methods which will be later examined. Hermaphrodite molluscs, with a marvellously complicated sexual apparatus, ought also to be studied separately. Finally, the amorous habits of insects form a series of illustrative chapters.

From here, taking count only of exterior male organs or of organs which, internal when at rest, emerge at the moment of coition, one may attempt a vague and new classification of animal series.

1. Presence of penis, or of an erectile copulating tubercle : placentary mammals from man to marsupials exclusively ; certain runners and palmipeds ; crocodilians, chelonians, certain selacians, arthropods, rotifers.
2. Presence of a forked penis : marsupials, saurians, chelonians ; scorpionidæ.
3. Disjunction of the secreting apparatus from the copulating apparatus : spiders, dragon-flies.
4. Absence of penis, copulation by contact : monotremes (ornithorhynchus), birds, batrachians, crustaceans.

Love-Organs

5. No copulation ; exterior fecundation of eggs : fish, echinoderms.

6. Indirect transmission of sperm with or without contact (by the spermatophore) : cephalopoda, orthoptera.

7. Hermaphroditism : mollusca, tuniciers, worms.

8. Monogamous reproduction : protozoa, and certain of the last metazoa.

One needs many discriminations and exceptions to make this table more precise. It is however not untrue, although incomplete and lacking nuances, and it permits one to see : that the separation of sexes by well characterized copulating apparatus is not a sign of animal superiority, although it is found among the most gifted animals ; that birds with their genital system merely sketched in, seem to represent a type elevated in nature by the simplicity of organs and what it means : that the sexes in animals who are without copulation either profound or superficial tend, as in fish, to remain without difference ; that all other modes of copulation are attributed exclusively to inferior species ; that hermaphroditism was but a trial limited to a category of creatures lacking everything not exclusively designed for the process of reproduction ; that the absence of sex characterizes only the earliest forms of life.

If one considers no longer the mode of copulation but the apparatus itself, with the male part, penis, and the female part, vagina, one sees clearly that these extremely particular organs are hardly found well designed save in two great branchings where the intelligence is most developed : mammifera and arthropoda. There might be, perhaps, a certain correlation between complete and profound copulation and the development of the brain.

Chapter 9

The Mechanism of Love (I)

Copulation: vertebrates—Its very numerous varieties and its specific fixity—The apparent immorality of Nature—Sexual ethnography—Human mechanism—Cavalage or mounting—The form and duration of coupling in divers mammifers—Aberrations of sexual surgery, the ampallang—Pain as a bridle on sex—Maidenhead—The mole—Passivity of the female—The ovule, psychological figure of the female—Mania of attributing human virtues to animals—The modesty of elephants—Coupling mechanism in whales, seals, tortoises—In certain ophidians and in certain fish.

COPULATION: Vertebrates.—Forberg's *Figuræ Veneris* exhausts in forty-eight illustrations the methods of coupling accessible to the human species; the erotic manuals of India imagine certain further variants and voluptuous perfectionings, but many of these juxtapositions are unfavourable to fecundation, and a majority of them have only been invented in order to escape too logical and too material a result. Animals, the most liberated as well as the most stupid, are ignorant of all modes of conjugal fraud; needless to say no dissociation can be made in their rudimentary minds between the sexual sensation and the maternal, between sexual and paternal sensation, much less. The ingenuity of each species is small, but the universal ingenuity of fauna as a whole is immense, and there are few human imaginings among those which we term perverse and even monstrous which are not the right and the norm in one or another region of animal empire. Practices very analogous to (although very different in aim from)

The Mechanism of Love

divers onanist practices, to spermatophagia, even to sadism, are imposed on innocent beasts and represent for them virtue and chastity. A physician, who has not obtained much glory thereby, invented or proposed artificial fecundation : he was imitating spiders and dragon-flies ; M. le Marquis de Sade liked to imagine ruttings where blood and sperm flowed simultaneously ; mere kindergarten manual if one contemplate, not without bewilderment, the habits of an ingenious orthopter, the praying mantis, which prays to God, *la prego-Diou* as the Provençals call her, the prophetess as the Greek named her !

Baudelaire's verses ridiculing those who wish

“ aux choses de l'amour mêler l'honnêteté ”
(to mix seemliness into affairs of Love)

have a value not only moral but scientific. In love everything is just, everything is noble, as soon as it is a play moved by the desire of creating. It is more difficult doubtless to justify fantasies which are merely for the purpose of avoiding trouble, especially if one allow oneself to be blinded by the idea of specific finality ; it may however be affirmed, and nothing more need be said about the matter, that animals are not ignorant either of sodomy or of onanism and that they cede to them by necessity, in the absence of females. Sénancour has written wise and bold pages upon these practices among humans.

Sexual ethnography hardly exists. The scattered data on this subject, though extremely important, have not been co-ordinated. That would be a small matter. They have not even been verified. One knows nothing of coital practices save what life teaches one, questions of this sort being difficult to ask, and answers being always equivocal. There is here an entire science which has been corrupted by Christian prudery. An order was

The Natural Philosophy of Love

issued long ago and is still obeyed ; one has concealed all that unites, sexually, man and animal, everything that proves the unity of origin for all that lives and feels. Physicians who have studied this question have known only the abnormal, the malady : it would be imprudent to base conclusions on general practices from their observations. The best sources, at least for Europeans, are still the casuist writings. From the enumeration of sins against chastity gathered by professional confessors, one could, after some study, deduce the secret sexual habits of civilized humanity. But one must take care not to retain either the old idea of sin, or the same idea under the modern cloak of fault, crime or error. Practices common to an entire ethnic group cannot be judged to be other than normal, it matters little whether they have been stigmatized by the apologists of right living. What is good is what is and what will continue to be. It is known that bimanés and quadrumanés are very libertine, and that this is in accord with their physical suppleness and their intelligence ; it is a fact undeniable and insurmountable, even if annoying. The human couple has drawn from this tendency a thousand erotic fantasies which, in being disciplined, have ended in the creation of a veritable sexual method, be it disinterested pleasure, be it preservation against fecundity. Is this of no importance ? How can one lecture about depopulation if one lose sight of this primordial fact ? What can normal or patriotic reasoning do against an instinct which has become or has reappeared as an intelligent and conscious practice bound to what is deepest in human sensibility ? It is very difficult, especially when dealing with man, to distinguish between normal and abnormal. What is the normal ; what the natural ? Nature ignores this adjective, and one has dragged out of her bosom many illusions, perhaps in irony, perhaps in ignorance.

It is not perhaps very useful to describe human cavalcade

The Mechanism of Love

which is not strictly a mounting, as the woman is attacked from the front. Veritable cavalage has been, as one knows, praised by Lucretius, although it has, and this detracts nothing from its merits, an air frankly animal ; it is the form of love called by the theologians *more bestiarum* and by Lucretius *more ferarum*, which is the same thing :

Et quibus ipsa modis tractetur blanda voluptas,
Quoque permagni refert ; nam more ferarum,
Quadrupedumque magis ritu, plerumque putantur
Concipere uxores, quia sic loca sumere possunt,
Pectoribus positis, sublati semina lumbis.

This mode, considered by Lucretius as the more favourable to fecundation, is that of most mammals, of nearly all insects and of many animal families. Apes great and small know no other. The architecture of their bodies would make face to face copulation very difficult. One must not forget that their upright position is never more than momentary, even in orangs and chimpanzees ; they have not much better sense of equilibrium than bears, much less than kangaroos, marmosets¹ and squirrels ; even when they stand up one feels that they have four feet. Love among them is not free from the seasons, and although they are libidinous all the year, they do not seem fit for generation save through the weeks of their rutting time : then their genital organs acquire a permanent rigidity ; the udders of the females, ordinarily as small as those of the males, only swell during this period. There is, therefore, a vast difference, from the sexual standpoint, between man and the great ape, his anatomic neighbour. Man, even in the humblest species, has mastered love and made it his daily slave, at the same time that he has varied the accomplishments of his desire and made possible its

¹ Here R. de G. uses the term marmot ; up to this the word I have translated marmoset has been *ouistiti*.

The Natural Philosophy of Love

renewal after brief interval. This domestication of love is an intellectual work due to the richness and power of our nervous system, which is as capable of long silences as of long physiological discourses, of action and of reflection. The brain of man is an ingenious master which has managed, without possessing any very evident superiority, to get out of the other organs work of the most complicated sorts, and most finely-sharpened pleasures; its mastery is very feeble in quadrumanes and other animals; it is very strong in insects, as will be explained in a following chapter.

One need not pause for a minute description of the exterior love mechanism of all animal species. It would be long, difficult and wearisome. A few characteristic examples will be enough. The duration of coition is extremely variable, even in superior mammals. Very slow for dogs, coupling is but a thunderclap for the bull, and for the ram it is sometimes called the struggle. The bull merely enters and leaves, and it is a spectacle for philosophers, for one understands immediately that what drives the fiery beast at his female is not the lure of a pleasure too swift to be deeply felt, but a force exterior to the individual although included in his organism. By its long grievous duration the coition of dogs leads to analogous reflections

In triviis quum saepe canes discedere aventes

Diversi cupidine summis ex viribus tendunt.—LUCRETIVS.

{ This is because the dog's penis contains a hollow bone giving passage to the urethra. Around this bone are gathered the erectile tissues whereof one, the node of the prong, swells disproportionately during coition and prevents the separation of the two animals after the act is accomplished. They remain a long time uncomfortable, not managing to free themselves until

The Mechanism of Love

long after their desire has turned to disgust, a grotesque and lamentable symbol of many a human liaison.

Our other familiar animal, the cat, is not more happy in his affections. His penis is furnished toward the tip with thorns, with horny papilla, and the intromission as well as the separation is only accomplished to the accompaniment of groans. What one hears at night are not cries of voluptuousness but of suffering, the howlings of a beast whom nature has caught in the trap. This does not prevent the female from being very enterprising; responding to the cries of the pursuing male she excites him in a hundred ways, biting at his neck and belly with an insistence which has, they say, provided a metaphor in the erotic vocabulary. Biting the neck is much more curious, as it is of a much less direct intention. Bitches also bite the neck of the dog in prelude; for near the neck is situated the original knot of nerves governing the secret parts and the genital region.

The pain which accompanies the sexual act ought to be differentiated with precision from passive suffering. It is very possible (women can testify to the fact) that sighs and even cries emitted at such a time are the expression of a mixed sensation, wherein joy has almost as great a part as suffering. We must not judge feline exclamations from the shrillness of timbre; tortured by the male prong the she-cat howls, but they await the supreme benediction. The rigour of the first approaches is perhaps but the promise of deeper delights: at any rate some women have thought so.

One knows that a cat's tongue is rough: so is the tongue and all the other mucous surfaces of negroes. This roughness of surface notably augments the genital pleasure, as men who have known negresses testify. It has even been perfected. The Dyaks of Borneo pierce the extremity of the penis through the navicular channel and fit into it a pin to both ends of which are

The Natural Philosophy of Love

attached tufts of stiff hair in the form of a brush. Before surrender the women by certain tricks and traditional gestures indicate the length of the brush desired. In Java this apparatus known as the ampallang is replaced by a sheath of goat skin, more or less thick. In other countries there are incrustations of little pebbles which give the gland the shape of an embossed mace; and these pebbles are sometimes replaced by tiny bells, so that the men make in running a sound like mules, and attentive women can judge their value according to the intensity of their sexual music. These customs, noted by de Paw among certain aborigines of America, have not been recently observed, doubtless because the Christian modesty of modern travellers has closed their eyes and ears at convenient moments. No custom is abolished save in the face of some other custom more useful to sensuality, and the imagination seems rather to advance than to recede in these matters. It is true that the inventors hide themselves, even in savage countries, sexual morality tending toward uniformity.

These artifices, which appear curious to us, have certainly been created at the instigation of women, since theirs is the profit of them. Males have submitted to them, happy no doubt to be delivered at the price of passing pain from the terrible lasciviousness of their females. Racked and flayed by such instruments the women ought, at least for a few days, to flee the male and brood in silence upon their luxurious memories. Chinese and Japs, whose women are equally lascivious, are familiar with analogous means; to dominate their companions they have also invented ingenious onanist methods which give them time to attend to their own affairs while peace reigns over their hearthstones. In the strange dissemblance between human races the Aryans have, for the same purpose, made use of the religious check-rein, of prayer, of the idea of sin, and finally of

The Mechanism of Love

liberty, that is to say of the pleasure of vanity which bewilders the woman, and invites her to please someone else before satisfying herself.

Woman is not the only mammal for whom, apart from the peculiar form of the penis, the first approaches are painful ; but there is perhaps no female who has better reason than the mole for fearing the male. Her vulva, exteriorly unperforated, is covered by hide as downy as that of the rest of her body ; to be fecundated she must undergo a veritable surgical operation. One knows how these beasts live, burrowing in search of food, in long subterranean galleries of which the wastage, pushed up here and there, forms the mole-hill. In rutting time, forgetting his hunting, the male starts in quest of a female ; as soon as he divines her he starts digging in her direction, furiously excavating the hostile earth. Feeling herself hunted the female flees. Hereditary instinct makes her tremble before the tool which shall open her belly, before the redoubtable gimlet-armed penis which has perforated her mother and all her female ancestors. She flees, digs as the male advances, cross-hatching tunnels in which her persecutor may end by losing his way : but the male also is educated by heredity ; he does not follow the female but circles round her, heads her off, ends by catching her in an impasse, and while she is still ramming her blind muzzle into the earth, he grips, operates and fecundates. Charming emblem of modesty, this small, soft, black-pelted beast. What human virgin would show such constancy in the defence of her virtue ? Who, alone in the night, in a subterranean palace, would use her hands to open the walls, employ all her strength to flee from her suitor ? Philsosophers have believed sexual modesty to be an artificial sentiment, the fruit of civilization : they did not know the mole's story, nor any of the true stories in nature, for nearly all females are timorous,

The Natural Philosophy of Love

nearly all react, at the appearance of the male, in fear or in flight. Our virtues are never more than psychological tendencies, and the finest of them are those whose explanation we are forbidden to seek. Why is the she-cat violent, the she-mole timorous? Without doubt the she-mole observes the rule, even in exaggerating its severity, but why the rule? There is no rule, there are nothing but facts which we group in modes perceptible to our intelligence, facts which are always provisory, and which a change of perspective can denaturalize; the notion of a rule, the notion of a law, confession of our impotence to pursue a fact into the logical origins of its genealogy. The law is a fashion of speaking, an abbreviation, a point of rest. The law is half the facts plus one. Every law is at the mercy of an accident, an unexpected encounter; and yet, without the idea of law all would be mere night in our consciousness.

"The male," says Aristotle, in his *Treatise on Generation*, "represents the specific form, the female, the matter. She is passive, inasmuch as she is female; the male is active."

Sexual modesty is a fact of sexual passivity. The moment will come for the female to be in her turn active and strong, when she has been fecundated and when she must give birth and food to the posterity of her race. The male then becomes inert; equable sharing of the expense of forces, just division of labour. This passivity of the female element is found again in the very figuration of animality, formed by the egg and the spermatozoon. One sees the play under the microscope: the egg waits, solid as a fortress or as a woman whom many men look on and covet; the little animals begin their attack, they besiege the enclosure, they butt it with their heads; one of them breaks the wall, enters, and as soon as his tadpole tail passes the breach, the wound re-closes. The entire activity of this embryonic female reduces itself to this gesture; the greater

The Mechanism of Love

part of her great sisters know no other. Their free will nearly always consists in this: they receive one among the arrivals, without it being possible to tell very well whether the choice is psychological or mechanical.

The female waits or flees, which is but another way of waiting, the active way; for not only *se cupit ante videnti* but she desires to be taken, she wishes to fulfil her destiny. It is doubtless for this reason that in species where the male is feeble or timid, the female resigns herself to an aggression demanded by care for future generations. In short, two forces are present, the magnet and the needle. Usually the female is the magnet, sometimes she is the needle. These are details of mechanism which do not modify the general march of the machine to its goal. At the origin of all feeling there is a fact irreducible and incomprehensible in itself. Common reasoning starts from the feeling to explain the fact; this gives the absurd result of making thought run in a set track, like a horse in a circus. Kantian ignorantism is the masterpiece of these training exercises, where, starting from the categoric stable, the learned quadruped necessarily returns thither, having jumped through all the paper hoops of scholastic reasoning. Observers of animal habits fall regularly into the prejudice of attributing regularly to beasts directive principles which only a long philosophic education and especially Christianity have rammed into restive human docility. Toussenel and Romanes are rarely superior to the possessors of a prodigious dog or miraculous cat: one must reject as apocryphal the anecdotes of animal intelligence, and especially those boasting their sensibility, or celebrating their virtues; not that these are of necessity inexact, but because the manner of interpreting them has vitiated in principle the manner of observation. One sole observer appears to me trustworthy in these matters, namely J. H. Fabre, the one man who, since

The Natural Philosophy of Love

Réaumur, has penetrated furthest into the intimacy of insects, and whose work is veritably the creator, perhaps without his having suspected it, of a general psychology of animals.

The madness of attributing to beasts the intuitive knowledge of our moral catechism has created the legend of the elephant's sexual modesty. These chaste monsters hide, it is said, when they make love; animated by a wholly romantic sensibility, they cannot give way to their feelings save in the mystery of the jungle, in the labyrinth of the virgin forests: that is why they have never been known to breed in captivity. Nothing is more idiotic; the elephant in the public garden or the circus is ready enough to make love, although with less enthusiasm than in his native forest, as is the case with nearly all newly captive beasts. He breeds under man's eye with perfect indifference, and no showman can prevent the cow-elephant, who is very lecherous, from manifesting with full voice her shameless desires. As her vulva opens not between her legs but toward the middle of her abdomen, Buffon believed that she had to lie on her back to receive the male. This is not so, but she has to make a particular gesture: she kneels.

Whales, who are by far the greatest of mammals, obey a special rite imposed by their lack of numbers and the element in which they live; the two colossi heave over on their sides like derelict ships, and join obliquely, belly to belly. The male organ is enormous even in the state of rest, six or eight feet long and fifteen or sixteen inches in circumference. The vulva of the female is longitudinal; near it is found the udder which projects greatly when she gives suck. This udder has ejective power, the whale cub hooks on by his lips, and the milk is sent to him as from a pump, marvellous accommodation of organs to the necessities of the milieu.

Anatomy forces female seals and walruses to turn over to

The Mechanism of Love

receive the male. In the species commonly called the sea-lion, she seems, according to observations perhaps too sketchy, to make the advances. The male being stretched out at rest she rolls before him and plagues him, while he grumbles. She succeeds in moving him, and they go to play in the water. On return the female lies on her back, the male who is much thicker and longer covers her, propping himself on his arms. The coupling lasts seven or eight minutes. The posture of female seals is also that of hedgehogs, and truly the cavalcade here must be particularly thorny. Despite his roof the male tortoise climbs on to the female and installs himself there, clinging to her shell with the nails of his fore-feet; there he stays fifteen days having slowly introduced into her patient organs his long round prong, ending in a sort of pointed ball, pressing with all his strength the enormous clitoris of the female. Here we find ourselves far from mammals and from the excitability of the bull; this coupling which lasts a whole season leads us toward the voluptuous laziness of disgusting and marvellous gasteropods. According to tales which are, perhaps, not contradictory, crocodiles couple in the water, according to some, and on land according to others; in water laterally, on land, the female on her back. It is said to be the male who puts her on her back, and who, coition completed, helps her to right herself; charming spectacle, which I cannot guarantee to be so, but which would improve our idea of the gallantry of these ancient divinities.

I do not know whether anyone has ever remarked that the caduceus of Mercury represents two serpents coupled. To describe the caduceus is to describe the love mechanism of ophidians. The bifurcated penis penetrates the vagina, the bodies interlace fold on fold while the two heads rise over the stiffened coils and look fixedly at each other for a long time, eye gazing into eye.

The Natural Philosophy of Love

Certain fish have penial organs, they can then realize true copulation ; thus dog-fish, bounce, sharks, sea-hinds. The males grip the females and hold them with hooks often formed at the expense of the abdominal fin by cartilaginous pieces which penetrate the female orifice and serve as slide to the penis. The male skate seizes the female, turns her over, clamps himself to her, belly to belly, holds her with his penial tentacles and finishes the coupling, releasing his seed which flows into the cloaca. The operation is repeated several times ; separated by the emission of skatelets who are born alive, and it continues until the female has discharged the greater part of her eggs.

Chapter 10

The Mechanism of Love (II)

Copulation (continued) — Arthropods — Scorpions — Large aquatic crustaceans — Small crustaceans — The hydrachne — Scutillary — Cockchafer — Butterflies — Flies, etc. — Variation of animals' sexual habits.

AMONG insects, batrachians, and molluscs one finds the most curious modes of fecundation and those furthest removed from the usual mechanism of mammals; before coming to that we will give a few examples, toward forming an idea of the sexual habits of various species chosen from the arthropoda. In scorpions, which we may call terrestrial representatives of aquatic crustaceans, the two sexes are identical, the genital organs being usually invisible, hidden between the abdomen and the front part of the cephalothorax, where the head without neck is prolonged directly into the thorax. The male is provided with two rigid penes englobed in a sheath—double but forming a single canal; holding the female, belly to belly, he inserts them in the vulva, one branch bending to the left, the other to the right toward each of the two oviducts. There is the same mechanism in crustaceans, save in the rare cases when they are hermaphrodite. Lobsters, crawfish, crayfish and crabs, like the scorpion, couple in a manner singularly resembling that of humans. A curious spectacle, that of the hen lobster attacked by the male, turned on her back, patiently permitting him to stretch over her, enlacing her claws and his pincers! Vision of a sabbat which Callot or Doré would only have painted in fear! Perhaps one should consider this before

The Natural Philosophy of Love

opening the armoured belly of these beasts who have bred their species among algæ, and in holes of the rocks? The genital glands of crustaceans are excellent; people gladly eat those of the sea-anemone; the only good part of these spiny animals. The males of the greater crustaceans have erectile ejective canals, rising in the form of a double prong between the fore-feet; the females are correspondingly provided with two vulvæ opening in the third sternal segment, or at the base of the feet corresponding to this segment. Copulation is effected by quick acts, reiterated two or three times, lasting a quarter of an hour. The male of the fresh water prawn who swims leaning on his side, holds his female between his claws and progresses by bounds; she is much smaller than he is. The same mechanism is found in aselle and talitre or sea-flea.

There are many singularities in the sexual habits of small crustaceans, the male bopyrus lives as parasite on the female, who is four or five times larger; an oddity increased by the female herself being the parasite of the palemon. It is she who forms the little greyish bloatedness which one notices on the heads of shrimps when cooked. Fishermen state that this spot is a small sole, but they also tell other yarns: for example, that barnacles, the peduncular mussels which one sees on drift-wood, are the embryos of wild-ducks, and one noble sailor has himself seen them taking flight.¹ The male linguatula is also smaller than the female; he has one testicle but two long copulating organs which simultaneously penetrate the female, ejaculating toward the two ovaries. Another small male is the hydrachne, a water acarian, two or three times smaller than the female, he

¹ The French name of these cirripedes bears witness to this superstition: *anatif* is the abridgement of *anatifere*, duck-bearing, Latin *anas*, *anatis*. "A tree equally marvelous, is that which produces barnacles, for the fruits of this tree change into birds." (Mandeville's Travels.)

The Mechanism of Love

alone is provided with a tail at the end of which are his genital organs; those of the female are formed by a papilla situated beneath the belly and marked by a white patch surrounding the sluice. The male swims, the female comes to meet him, lifts herself obliquely and brings her white spot into touch with her lover's caudal extremity, the junction is accomplished. One then sees the male drag along the kicking female; the coupling, with periods of rest, but without interruption of profound contact, continues for several days.

With insects of superior talents it is, on the contrary, the female who carries off the male: the ant carries him on her back, while he bends his abdomen into a bow toward her vulva; thus weighted she flies, mounts, planes, then falls with him like a drop of water. He dies on the spot, the female gets up, returns to the nest and lays before dying. The fêtes of the ant are of the whole ant-hill at once, the fall of the lovers like a golden cascade, and the resurrection of the females gleams in the sun like a russet foam. The scutillary is an insect sometimes squarish or shield-shaped resembling the green wood-louse, sometimes long and cylindrical with points and lines of all colours on its wings. One of them, scutiform, known as *lineata*, with red back and black stripes, is common on umbellifera. Copulation takes place end to end; one can see them thus, the female towing the smaller male from leaf to leaf, from umbel to umbel.¹ The forficula also couple end to end; fleas, whose male is smaller, couple belly to belly with feet enlaced, the position, recalling that of dragon-flies, is more remarkable in the louverette, a small insect which

¹ This does not seem to be general. I have recently observed, on the umbels of wild carrots, numerous couples of scutillaries, proceeding by cavalcade, the male inert, couched on the walking female, who started at the least alarm. Form narrow, almost cylindrical; colour, orange-red, with two short black bands; strong sucker, long antennæ. Union lasting at least a day and a night.—R. de G.

The Natural Philosophy of Love

lives on broom, and readily throws itself upon man : the vulva is, in these, near the mouth.

Coleoptera are given to cavalage of duration varying from ten hours to two days. The male cockchafer pursues the female with fervour, he is so ardent that he often mounts other males, deceived by the odour of rut floating in the air. He seizes the female and holds her clamped by his forelegs and genital hooks. The union continues a day and a night, until the exhausted male falls over backward, and still hooked by the penial pincers, is dragged along on his back by the impassive female who moves on as she feeds, pulling him over the leaves until death detaches him ; then she lays and dies in her turn. Butterflies are likewise very fervent, the males make veritable voyages in quest of females, as Fabre has proved. They often fly coupled, the stronger female easily carrying the male : it is quite a frequent sight in the country to see these butterflies with four wings, rolling a little bewildered from flower to flower, drunken ships going where the sails bid them. With flies, feminism is brought frankly into the love mechanism. The females have the copulative apparatus ; they force their oviduct, a veritable prong, into the male's belly ; it is the females who make the mastering gesture, the male merely grips this gimlet with the hooks which surround his genital fent. It is this same auger which the female uses to bore the wood, earth or flesh where she deposits her eggs. The coupling is end to end, and one of the easiest to observe.

Here are enough examples to show what is permanent in the mechanism of true copulation, and what is variable in its exterior modes. Given the two chief pieces of the apparatus, the sword and the scabbard, nature, as one might say, leaves it to the imagination of each species to decide the best manner of using them ; all ways seem good if they fecundate. Nature has still more

The Mechanism of Love

remarkable methods, for the sexual inventions of humanity are nearly all anterior or exterior to man. There is not one whose model, even perfected, is not offered him by the animals, by the most humble of animals.

If there is no general rule, if there is no one moral manner of fecundating a female, one must recognize that the same mode is fixed in the same species, in the same genus or family. I do not think that anyone has observed variation in the sexual habits of an animal; yet acts of sheer disembarassment being possible, one cannot consider the love method as being rigorously fixed. It has varied in social bees, parting from the relation of the couple, the aggression of the male, to end in the political and autocratic fecundation of a sole female by a sole male chosen among an hundred slave favourites. The mechanism itself must have changed with the change of the organs, complying with corporeal circumstances and with those of the milieu, under pressure of the nervous system which demands acts without caring for the instruments which must execute them. One finds proof of these changes in the accidental hermaphroditism of a great number of invertebrates and even of fishes, such as the cod, the herring, the scomber: a fundamental change since it shifts the animal from a superior to an inferior category; a recall to origins, doubtless, and an indication that the species liable to such accidents are far from being physiologically fixed. It is very probable that analogous accidents less accentuated, visible sometimes in exterior malformation, invisible in their psychological influence, are the cause of certain tendencies in contrast to the sex apparent or even real. But this does not yet answer the main question: are there in animals, apart from purely mechanical aberrations, erotic fantasies? One cannot answer with certainty. The animal merely follows a groove; when he has gone through it, if he lives for another season, he

The Natural Philosophy of Love

merely goes over the same ground, attentive to the same need, submitted always to the same gestures. Very true, but the animals familiar to man or his neighbours, the dog, the ape, perhaps the cat, are assuredly capable of erotic fantasies; it is therefore difficult to deny this tendency to other animals, to the intelligent hymenoptera, for example. Who knows, moreover, whether certain eccentric modes of copulation are not fixed fantasies become habit which have supplanted an anterior method, the animal being little able to employ two customs at once?

What we have found, at least, is that the love mechanism is, in nature, of infinite variety, and that if it appears stable in most of the fixed species, in its entirety it is extremely oscillating capricious, and fantastic.

Chapter II

The Mechanism of Love (III)

Of birds and fish—Males without penis—Coupling by simple contact—Salacity of birds—Copulation of batrachians : accoucheur toad, aquatic toad, earth toad, pipa toad—Fœtal parasitism—Chastity of fish—Sexes separated in love—Onanistic fecundation—Cephalopods, the spermatophore.

IT is toward the middle of the second month of gestation that the separation of the cloaca into two regions is marked in the human fœtus : a partition is formed which will absolutely isolate the digestive channel from the uro-genital. The persistence of the cloaca is not a sign of primitivity, since one finds it in selacians, batrachians, reptiles, monotremes and birds. The uro-genital region of marsupials and of several rodents is submitted to a single sphincter, witness of original union.

The bird's cloaca is divided into three chambers, for the three functions, the outer orifice being necessarily unique, by definition. It is with this rudimentary apparatus that most birds turn to the pleasures of love. The male being wholly deprived of any erectile tissue, coition is by simple contact, a pressure, perhaps a rubbing ; displeasing as the comparison may be, it is a play analogous to the mouth to mouth kiss, or, if one prefer, to the pressing of two sapphists clasped vulva to vulva. Far from being a regression or a stop, it is perhaps a progress, the male at least gaining in security and vigour, being obliged to attain very little muscular development. The salacity of

The Natural Philosophy of Love

certain birds is well known, and one does not see that the absence of an exterior penis diminishes their ardour, or attenuates the pleasure which they find in these succinct contacts. Perhaps the direct genital pleasure is concentrated in a vascular papilla which swells a little at the moment of the approaches ; this is very rudimentary, often unnoticeable, but it seems to be an exciting organ, the producer of pleasure. The male mounts the female, holds her with feet and beak, the two cloaca are superposed, the sperm flows into the oviduct. One sees sparrows repeat the sexual act as often as twenty times, always with the same excitement, the same expression of contentment ; the female tires first, and shows her impatience. Birds' habits are especially interesting by reason of the play with which they surround their love-making, their parades, their combats ; we will deal with this in later chapters.

Batrachians live for hardly anything save reproduction. Outside their season of love, they remain stupefied. The rut over-excites them, and these slow, frozen animals then show themselves ardent and implacable. The males fight for the possession of females ; having seized a female, nothing will make the male let go. One has seen him stick to his post even after his hind legs were cut off, even after losing half his body. Yet the copulation is mere simulacrum, it takes place by simple contact in the absence of exterior organs, even in salamanders, despite the pads which surround the cloaca, an apparatus which has remained extremely rudimentary, or possibly problematic. With anura, the male, smaller than the female, climbs on her back, passes his fore-feet, his arms, under her armpits and remains skin to skin for a month, for two months. At the end of this time the pressed flanks of the female finally let fall the eggs, and he fecundates them as they fall. Such is the coupling of frogs, lasting from fifteen to twenty days. The male clambers

The Mechanism of Love

on to the female, encircles her with his arms, crosses his hands over her breast, and holds her tightly embraced. He then remains immobile, in an ecstatic state, insensible to every external shock, to every wound. It would seem that the sole aim of this enlacing is to exercise a pressure on, or to cause an excitement in, the belly of the female and to make her deliver her eggs. She lays a thousand and the male sprays them with sperm as they pass.

All the anura (tailless batrachians) thus press their females like lemons; but the method of fecundating the eggs is quite variable. The midwife toad, enlaced like the others, aids the emergence of the egg garland with his hind feet, he unrolls it grain by grain, with devotion, while the female, immobile emptier, lends herself willingly to this manœuvre, which she feels perhaps as a caress. The aquatic toad does not pull at the garland, he receives it in his paws, and when he has ten eggs or so, he sprinkles them, ejaculating with a movement of the flanks, which old Roesel¹ compares to that of a dog's in coition. As for the common land toad, whose note sounds like a pure crystal bell in the calm of the evening, he waits until all the eggs have emerged, arranges them in a heap, then excited by somersaults, he drenches the lot of them.

But no batrachian patience is as curious as that of the pipa toad. This is a hideous beast with small eyes, mouth surrounded with whisker-prickles, skin blackish-green, full of warts and swellings. As the eggs are laid the male fecundates them, then taking them in his large webbed feet he spreads them out on the female's back. Around each egg there forms a little protective pustule, in which the young hatch. The female on whom a hatch commences offers the odd spectacle of a back whence, here and there, heads and feet are sprouting, or from which

¹ In his *Historia Naturalis Ranarum*, 1758, *sub voce* *Bufo aquaticus*.

The Natural Philosophy of Love

emerge little toads as if born of a paradox.¹ This formation is another proof that nature finds anything good which happens to attain her purpose, and that she cares only for the perpetuation of life. An incubatorial pocket was necessary, and she had forgotten it; no matter, the animal will make one for itself, at its own expense or at the expense of some other species. The small pipas exercise a real parasitism, ordained by an absent-mindedness of nature. Whether the deposit of eggs be in the mother's back or in the tissue of some other animal the parasitism is no less evident, at most it is a question of degree. From this point of view it will be possible to consider the normal, internal evolution of sexual products as a parasitic evolution: the young of the mammal is a parasite of its mother, as the little ichneumon is a parasite of the caterpillar which serves it as uterus. Thus considered, the notion of parasitism temporary or larval will disappear, or rather take a much greater extension, enveloping a considerable number of facts up till now separated in irreducible categories.

Fecundation by contact is very rare in fish, other than selacians. One hardly finds it save in lophobranchs and certain other viviparous fish, such as the blenny; the milt penetrates the female organs without copulation and the eggs develop either in these organs, or in a pouch which the male carries under his belly, or even his mouth, he having thus the virtue of assuring the birth of his offspring. The lophobranchi are wholly singular fish; one of them, the sea-horse, horse-headed ludion, gives a good idea of the family. Ordinary fish, such as one knows and eats, however M. de Lacépède may have classified them, are chaste animals void of all erotic fantasy.

What would appear to be the essential of pleasure is unknown

¹ The back as gestative chamber is also found in wood-lice, during one of their parthenogenetic phases, cf. Fabre, *Souvenirs VII, les Pucerons du terebinthe*.

The Mechanism of Love

to fish. The males do not know possession nor the females surrender, no touch, no rubbings, no caress. The object of male desire is not the female but the eggs, he watches for those she is about to lay, he searches for those she has laid, an excitement quite like that produced by onanism, or engendered by fetishism in certain distorted minds which operates at the sight of a slipper or ribbon, and dies down, even to frigidity, in the presence of the woman herself. The fish spends his semen on eggs which he finds floating and whose mother he has never seen. Often both eggs and milt are left floating and meet only in the chance of current and wave. Sometimes fish form a separate couple. The female swims up-stream, stops over a grass or sand bottom, the male follows, obeying her gesture. Such habits have permitted people to breed fish with as great a certainty as they breed mushrooms, or more so. A female swelled with eggs is taken, squeezed like an orange, a male is emptied of his milt, and nature takes charge of the rest. This procedure is not possible with certain species which act in concert, the male tilted on to his back, his genital orifice beneath that of the female, and ejaculating in time with her.

One knows that salmon swim in troops often very dense, up rivers and into the branch streams and creeks, to lay their spawn in quiet favourable nooks. Then they go down-stream worn out by the dams and waterfalls which they have mounted by tail-swishing, and tired by their genital exercises. The column up-stream is often led by a female, the other females follow. Then swim the old males and lastly the young males. When the leader has found a suitable place, one of the females stops, hollows the sand with her belly, leaves a packet of eggs in the hole, an old male drenches them at once, but the patriarch has been followed by young bucks who imitate him and fecundate the same eggs. Thus, with these fish there is a sort of school where the

The Natural Philosophy of Love

experienced teach the new-comers the procedure of fecundation. This mixture of eggs and milt from fish of all ages should be very favourable to the maintenance of a specific type, if the instability of milieu did not bring about the encounter of elements belonging to different neighbouring varieties: despite the good will of naturalists, salmon and trout form practically only one family, and nothing is more difficult, for example, than to determine the species of a young salmon, or to state the difference between a salmon and a sea-trout.

The loves of fish (and also of echinoderms, starfish, sea-anemones, etc.) thus reduce themselves, in the main, to those of ovule and spermatozoid. But such simplification is rather shocking to the sensibility of a superior vertebrate, or to an insect accustomed to the amorous parade, to multiple and prolonged contacts, to the presence and complexity of the opposite sex. This fashion of love is admittedly not unknown to men, but they seem to be led to it rather by necessity than by taste, by morals rather than by the search for the maximum pleasure. Genital satisfaction obtained without contact, apart from being necessarily infecund, save in scabrous scientific experiments, often causes a nervous and muscular depression greater even than excess committed in common. But this result is not so evident that one can convert it into a moral principle, and the fact remains that onanism, carefully considered, is one among nature's gestures. A different conclusion would be more agreeable; but millions of creatures would protest, from all the oceans and from beneath the reeds of all rivers. One might go further and insinuate that this method which appears to us monstrous, or, since it is a matter of fish, singular, is perhaps superior to the laborious method of cavalcade, so ugly in general, and so inconvenient. But there is not in terrestrial nature, any more than in conceivable nature, a high

80

The Mechanism of Love

and low, a wrong side and a right side ; there is neither a good nor evil manner, neither a right nor a wrong, but there are states of life which fulfil their purpose, since they exist and since existence is their aim. Doubtless the discord between the will and the organs is constant in all stages of life, and much accentuated in man, where the wishes are multiplex, but where the nervous system remains, in short, the master and governs even to the danger of its life. It is not the chance of circumstances and of milieu that has swelled the spermoduct of certain fish into papilla, and then into penis, or formed a sheath for this penis at the expense of the caudal fin ; it is the will force of cerebral ganglia. The evolution of the nervous system is always in advance of that of the organs, this is a cause of incoherence, and at the same time, of progress and change. The day when the brain has no more orders to give, or when the organs have exhausted their faculties of obedience, the species is fixed ; if fixed in a state of incoherence it moves toward certain extinction, as the monotremes. Many species seem to have been destroyed in full evolution by the contradictory exigencies of a tyrannous and capricious nervous system.

It is necessary that the male cephalopod fecundate the female. How will he do it, having no organic sperm-vector ? He will make one. It was thought for a long time that the female argonauts were preyed on by a parasite. This mysterious beast is nothing but the instrument of fecundation. The male has a pouch where sperm accumulates ; in this pouch are made up little bags called spermatophores, the animalculæ move toward the third arm of the argonaut (nautilus), and this arm enlarges in spatula, equips itself with a scourge, loses its suckers, and then when heavy with life as a ripe grape, it falls off, moves toward the female, comes alongside her belly, lodges in the pallear cavity and oozes out its seed into the organs where this

The Natural Philosophy of Love

will encounter the ovules. The male organ here appears as a temporary individual, a third being between father and mother, a messenger which carries the male genital treasure to the female. Neither of them knows the other. The male is wholly ignorant of the female for whom he detaches a limb, and the female knows nothing of her fecundator save the sole organ which fecundates. A little more complicated than that of the fish, this method is probably older, and seems possible only for aquatic animals. It is nevertheless that of many vegetables ; this swimming arm recalls the winged grains of pollen which travel far from their pistils. Very few flowers can fecundate directly ; nearly all have need of an intermediary—the wind, an insect, a bird. Nature had given wings to the phallus ages before the imagination of Pompeian painters ; she had thought of this, not for the pleasure of bashful women, but for the satisfaction of the most hideous beast that people the ocean, cuttlefish, calamaries, octopi.

Chapter 12

The Mechanism of Love (IV)

Hermaphroditism—Sexual life of oysters—Gasteropods—The idea of reproduction and the idea of pleasure—Mechanism of reciprocal reproduction : helices—Spintrian habits—Reflections on hermaphroditism.

FISH are the only vertebrates among whom one encounters hermaphroditism, either accidental, such as cyprins, herrings, scombers ; or regular, like sargus, sparraillon, seran. The myxines, very humble fish living as parasites, are alternative hermaphrodites like oysters and ascides ; the genital gland functions first as testicle, then as ovary. The amphioxus, a bridge between invertebrates and vertebrates, is not hermaphrodite. The most strongly marked and most complicated forms of hermaphroditism are found in molluscs, and chiefly in gasteropods. The alternate hermaphroditism of oysters produces effects which have been observed throughout antiquity. The advice to abstain from oysters during months lacking an "r" is based on a fact, and that fact sexual. From September to May, they are males, they are testicles, they elaborate sperm, they are good ; from June to August the ovaries bourgeon, fill with eggs which turn whitish as they ripen, the oysters are females, they are bad ; fecundation takes place at this time, the spermatozoids, born in the preceding period, finally perform their office. Superstitions before being rejected ought to be minutely observed and analysed, there is nearly always a kernel of truth in the gross envelope.

In the hermaphroditism of echinoderms, of fish, there is never

The Natural Philosophy of Love

auto-fecundation ; either the sexual products meet outside the animals, which have neither copulating organs, nor a related genital life (it is a simple growth of germs) ; or in a more complex phase the individuals have exterior male organs and female organs, but they cannot use them without the aid of another individual acting either as male or as female. Here a new distinction is imposed: either the animal will be successively male, and then female ; or it will be both at once. This union of the two sexes seems useless, according to human logic, when the two genital glands ripen at different seasons ; one understands it better when the reciprocal fecundation is simultaneous, since this doubles the number of females and better assures the conservation of the species. One must set aside the idea of pleasure. Apart from the fact that we can judge it only by a very distant and even dubious analogy considering the difference between the nervous systems of man and mollusc, one must set it aside as useless. 'Pleasure is a result, not an aim. In most animal species coition is but a prelude to death, and often love and death work their supreme act in the same instant. Copulation of insects is suicide : would it be reasonable to consider it as produced by a desire to die ? One must dissociate the idea of pleasure and the idea of love, if one wants to understand anything of the tragic movements which perpetually beget life at the expense of life itself. Pleasure explains nothing. People might simply be commanded to die as a means of reproduction, and they would obey with the same eagerness : this is observed even in humanity. Dithyrambs on pleasure would be misplaced apropos of the mutual ticklings of two snails on a vine-leaf ; the subject is rather uncomfortable.

Note, then, two helices, both bisexual, fulfilling exactly the biblical phrase "he created them male and female" ; their genital organs are very well developed ; the penis and oviduct

The Mechanism of Love

opening into a vestibule, which in the act of copulation unbellies itself in part, so that the penis and vagina come in touch with the orifice ; mutual intromission takes place. A third organ comes from the vestibule, without analogy in superior animals ; it is a little pocket containing a small stiletto, a jewelled dagger ; it is an excitative organ, the needle to prick up desires. These beasts who have prepared for love by fasting, by long rubbings, by whole days of close pressure, finally come to a decision, the swords come out of their scabbards, they conscientiously stab each other, this causes the penis to rise from its sheath ; the double mating is accomplished.

There are species in which the position of the organs is such that the same individual cannot be at the same time the female of the one for whom he acts as male, but he can at that moment serve as female to another male, who is female to a third, and so on. This explains the garlands of spintrian gasteropods which one sees realizing innocently and according to the ineluctable wish of nature, carnal imaginings that have been the boast of erotic humanity. Facing this light from animal habits debauchery loses all character and all its tang, because it loses all immorality. Man, who unites in himself the aptitudes of all the animals, all their laborious instincts, all their industries, could not escape the heritage of their sexual methods ; and there is no lewdness which has not its normal type in nature, somewhere.

Before leaving this repugnant aspect, one may still consider leeches. Hermaphrodite, they also practise reciprocal fecundation, but the position of their organs compels them to assume a peculiar position : the prong emerges from a pore near the mouth ; the vagina is above the anus. The copulation of these wretched animals forms, therefore, a head-to-tail, the buccal sucker coinciding with the anal sucker.

The Natural Philosophy of Love

Animals having both sexes, do not necessarily show sexual dimorphism. But neither this exact likeness of individuals, nor the double function with which they are charged, contradicts the general law which seems to wish that an individual should be due to elements coming from two different individuals. Autofecundation is exceptional, is very rare. Whether or no the individual possess the two genital glands, or one of them only, it needs a male, or an individual acting as male, and a female or an individual acting as female, to perpetuate life. Alternative hermaphroditism confirms these propositions, be it that the same gland transforms itself totally, turn by turn, into male principle, then into female principle; be it divided between a male half and a female half, these two halves ripen simultaneously or successively. When there is total or partial alternation, the male principle is ready first, and waits: thus the aggressivity of the male, and the passivity of the female are visible in the most obscure manifestations of sexual life: the fundamental psychology of an ascidian does not differ from that of an insect, or from that of a mammal.

Chapter 13

The Mechanism of Love (V)

Artificial fecundation—Disjunction of the secreting apparatus from the copulating apparatus—Spiders—Discovery of their copulative method—Brutality of the female—Habits of the epeira—The argyronete—The tarantula—Exceptions : the reapers—Dragon-flies—Picture of their love affairs.

THE apparatus for secreting sperm and that for copulating are sometimes separated. The female has a vagina normally situated ; the male has no penis, or else it is situated in some part of the body not in symmetry with the receiving apparatus. It is then necessary either for the male to make an artificial penis, as one has seen in the cephalopoda, and as in the spider, or for him to engage in complicated manœuvres to dominate the female, and to engineer the conjunction of the two apparatus, as does the dragon-fly (libellule).

The method of most arachnids strangely resembles the medical practice called artificial fecundation, although it is hardly more so than normal fecundation. In both it is a question of putting spermatozoids in the way of encountering ovules : it matters little whether phallus or syringe be the vehicle, the spider uses a syringe. For a long time it was thought that the whole genital apparatus was situated in the feelers of the male, but anatomy could find nothing there to resemble it. Savigny thought that the introduction of the feelers into the vulva was merely an excitative manœuvre, and that the true copulation followed. One had only observed half the act, the second phase. The

The Natural Philosophy of Love

first consists in the male gathering up the semen in his own belly with the feelers ; he then places it in the female organ. The maxillary peripalpæ or antenna, thus transformed into a penis, contains a spiral canal which the male fills in placing it against the opening of his spermatic canals. One sees the joint of one of the knuckles open, letting appear a white bourrelet (pad with a hole in the middle), this is bent, and plunged into the vulva, it emerges and the insect flees. System marvellously adapted to the circumstances, for the female is ferocious and quite ready to devour her suitor. But is it the ferocity of the female which has modified the fecundating system, or is it the system, so lacking in tenderness, which has led the receptress to find only an enemy in the aspirant who advances horn to the fore ? Acts which produce constant and useful results always seem to us ordered by an admirable logic ; one need only give oneself up to a certain laziness of mind, to be led quite gently to call them providential and to fall little by little into the innocent nets of finalism.

Doubtless—and undeniably—there is a general finality, but one must conceive it as represented entire by the present state of nature. This will not be a conception of order, but a conception of fact, and in any case, the means used to attain this fact should in no way be integrated in the finality itself. None of the procedures of generation, for example, bears the mark of necessity. It is not the ferocity of the she-spider which demands the sexual habit ; the female mantis is still more savage, and the mantis's method is cavalage. It does not seem as if anything in nature were ordered in view of some benefit ; causes blindly engender causes ; some maintain life, others force it to progress, others destroy it ; we qualify them differently, according to the dictates of our sensibility, but they are non-qualifiable ; they are movements, and nothing else. The pebble ricochets

The Mechanism of Love

on the water, or it doesn't ; this has no importance in itself, nothing more will come of it, and nothing less. It is an image of supreme finality : after eight or ten bounds, life, like the pebble thrown by a child, will fall into the abyss, and with it all the good and evil, all facts, all ideas, and all things.

The idea of finality leads back to the idea of fact, there is no longer any temptation to attempt an explanation of nature. One would try modestly to reconstruct the chain of causes and, as a great number of rings will always be lacking, and as the absence of one ring alone would suffice to unhook the whole reasoning, this will be done in a piety tempered by scepticism.

The epeira, although a spider, is not an ill-conditioned beast ; she is episcopal, she carries on her back a pretty white cross upside down. The large ones are the females ; the very small ones, the males. Both hook their webs upon bushes, or shrubs, and live without knowing each other until instinct has spoken. A day comes when the male is restless ; the gnats fail to satisfy him ; he leaves, abandons the home he will perhaps not see again. He is not, indeed, without misgivings, and fear is mingled with his desire, for the mistress he seeks is an ogress. Thus he prepares a way of retreat in case of combat ; he stretches a thread from the female's web to a neighbouring branch, road of entry, gate of exit. Often, the instant he shows himself with his excited air, the female epeira leaps on him and eats him without formality. Is it ferocity ? No, stupidity. She also is awaiting a mate, but her attention is distraught between the coming of the caller and the coming of prey. The web has shaken, she leaps, enlaces, devours. Possibly a second male if he attempt the pass, will be gladly received, the first sacrifice accomplished, perhaps this mistake, if it is one, will wake all the amorous attention of the distracted female ? Ferocity, stupidity ; there is another explanation which I will give later,

The Natural Philosophy of Love

apropos the mantis and the green grasshopper: it is very probable that the sacrifice of the male, or of a male, is absolutely necessary, and that it is a sexual rite. The little male approaches; if he is recognized, and if his coming coincides with the genital state of the female, she merely behaves like all the rest of her peers, and even though she be the larger and stronger, she flees; she lets herself, full of coquetry, slide down a thread; the male imitates the play, he descends, she mounts, he mounts, the acquaintance is made, they feel each other, they pat each other, the male fills his pump, the mating is accomplished. She is rapid, the male stays on guard, ready to flee at the least movement of his adversary; often he has no time. Scarcely has the fecundation been completed when the ogress turns, leaps, and devours the suitor on the very spot of his amours. They say that she does not always wait for the end of the operation, and that preferring a good meal to a caress, she interrupts the performance with a slap of her mandibles. When the male has the luck to escape he disappears like a flash, goes down his thread like greased lightning. The argyronete uses manœuvres analogous, but even more curious. It is a water-spider, which goes under water in an ingenious small diving-bell, a future nest. The female having made her diving-bell, the male, not daring to present himself, thinks out the scheme of making another bell just next that of the female. Then at a propitious moment he breaks through the dividing wall and profits by the surprise of his sudden entry. When it is a matter of not being eaten, all means are the right ones.

The tarantula, whose habits are far from gentle, is not cruel to her suitor. This monster who spins no web, spins out a long idyllic courtship; extended preludes, puerile games, delicate caresses, lambkins' leapings. Finally the female surrenders fully. The male places her as he wishes, chooses for her the

The Mechanism of Love

pose most pleasing to him, and lies obliquely against her, gently and repeatedly taking the sperm from his abdomen he insinuates each of his palps, one after the other, in the swollen vulva of the female. The break-away is sudden, a jump. Still more tender are the courtships of the leaping spider ; they advance by little rushes, stop, watch, leap on their prey, insect or fly, or else float at the wind's will on the end of a long hanging web-thread. When male and female meet, they approach, tap each other with fore-feet and tentacles, separate, reapproach, recommence. After a thousand salutations, they pose head to head, the male climbs on to the female, stretches out until he reaches the abdomen. Then he lifts the extremity of it, applies his palp to the vulva, and retires. The same act is begun again several times, the female is all compliance and offers no insult to her companion. There are certain exceptions to the method of spiders ; the reapers, little balls mounted on immense legs, act by cavalcade. The males have a retractile prong fixed by two ligaments to the abdomen, the female an oviduct which opens in the vulva and spreads interiorly into a vast pouch, the resting place for the eggs. The male does not manage this female, a strong objector, save by seizing her mandibles with his pincers. Overcome by this bite she submits ; the coupling lasts several seconds.

The dragon-fly, gracefully called in French "*la demoiselle*," is one of the finest insects in the world and certainly the most beautiful of those which fly in our climate ; no soft butterfly colour is a match for the moving shimmer of its supple abdomen, and the bright head-colours as of a steely-blue helmet. It is difficult to find two alike : one has tawny body and dove-grey abdomen, spotted with yellow, and black feet, transparent wings with brown borders or nerve-veinings, or these in black and white ; another has a yellow head, brown eyes, brown corselet veined in green, an abdomen touched with green and yellow,

The Natural Philosophy of Love

irised wings ; another is gilded green, or blue with green shimmer, and spotless wings ; another has wings thin to invisibility, is clothed in all shades, metallic blue, reddish-brown green, iris violet, tawny chrysanthemum, whatever her fundamental colour she encircles her elegant barrel with rings of black velvet. Some fly very high, in the trees, others along the streams and over pond edges ; others over ferns, reeds, broom. I have passed days in the sun watching them, waiting to see their courtships ; I have seen them, and know that Réaumur has not deceived us. It was on the surface of a pond among the border flowers, a morning of July, a flaming morning. The corselet of blue-green, almost invisible wings, fluttered in great numbers, slowly, as if seriously ; the hour of parade had arrived. And everywhere couples formed, rings of azure hung from the grass blades, trembled on leaves of the water-lentil, everywhere green arrows and blue arrows played at flight, and wing-brushing, at joining. The big eyes and strong head give an air of gravity to the brilliancy of this spectacle.

The ejaculatory canal opens at the ninth ring of the abdomen, that is to say, at the point ; the copulating apparatus is fixed at the second ring, that is, near the neck, and is composed of a penis, of hooks, and a reservoir : the male bending his long belly first fills the reservoir, then empties it into the organs of the female. For a long time he pursues the desired mistress, plays with her, finally seizes her above the neck with the terminal pincers of his abdomen, then, turning like a serpent, he bends forward and continues to fly, a beast with four pairs of wings. In this attitude the male, sure of himself, with the air of the hour's indifferent master, chases midges, visits flowers and the axilla of plants where the midges sleep, nabs them with his feet and puts them into his mouth. Finally the female accedes, bends downward her flexible abdomen and makes its orifice coincide with the

The Mechanism of Love

male's pectoral penis: the two beastlets are but one splendid ring with a double cup, a ring trembling with life and with fire.

No gesture of love can be conceived more charming than that of the female slowly bending back her blue body, going half-way toward her lover, who erect on his fore-feet bears, with taut muscles, the full weight of the movement. It is so pure, so immaterial, one would say that two ideas were joined in the limpidity of ineluctable thought.

Chapter 14

The Mechanism of Love (VI)

Cannibalism in sex—Females who devour the male, those who devour the spermatophore—Probable use of these practices—Fecundation by the whole male—Loves of the white foreheaded dectic—The green grasshopper—The Alpine analote—The ephippigere—Further reflections on the cannibalism of sex—Loves of the praying mantis.

THE spider eats her male ; the mantis eats her male ; in locustians, the female is fecundated by a spermatophore, an enormous genital bunch-of-grapes which she gnaws through to the last shred. These two facts should be brought together. Whether the female swallow the male entire, or only the product of his genital glands, it is probably in both cases a complementary act of fecundation. There are possibly in the male assimilable elements necessary for the development of the eggs, almost as the albumen of seeds, little aborted plants, is necessary for nourishing the vegetable embryo, the surviving plantlet. Plants, according to recent study, are born twins : in order to live one must devour the other. Shifted to animal life, and slightly modified, this mechanism explains what one terms, from sentimentalism, the sexual ferocity of the she-mantis and the she-spider. Life is made out of life. Nothing lives save at the expense of life. The male insect nearly always dies immediately after the mating ; in locustians he is literally emptied by the genital effort : whether the female respect, or devour him, his life would hardly be longer, or shorter thereby. He is sacrificed ; why, if this is for the good of the species, should he not be

The Mechanism of Love

eaten? Anyhow, he is eaten; it is his destiny, and he feels it coming, at least the male spider does, and the male mantis allows himself to be gnawed with perfect stoicism. The spider revolts, the other submits. It is really a matter of ritual, not of accident or crime. One might try experiments. One might prevent the female *dectic* from pecking the mistletoe berry which the male has discharged on her; one might watch the coupling of mantes and isolate them immediately: and then follow all the phases from laying to hatching. If the spermatophagy of the *dectic* is useless, if the murder of the male mantis is useless, it will annul the foregoing reflections, and others will rise.

The white-fronted *dectic* is, like all the locustians (grasshoppers), a very ancient insect; it existed in the coal era, and it is perhaps this antiquity which explains its peculiar fecundative method. Like the cephalopoda, his contemporaries, he has recourse to the spermatophore; yet there is mating, there is embracing; there are even play and caresses. Here are the couple face to face, they caress each other with long antennæ "fine as hair," as Fabre says; after a moment they separate. The next day, new encounter, new blandishments. Another day, and Fabre finds the male knocked down by the female, who overwhelms him with her embrace; he gnaws her belly. The male disentangles himself and escapes, but a new assault masters him, he lies flat on his back. This time the female, lifted on her high legs, holds him belly to belly; she bends back the extremity of her abdomen; the victim does likewise; there is junction, and soon one sees something enormous issue from the convulsive flanks of the male, as if the animal were pushing out its entrails. "It is," continues the best observer, Fabre, in his *Souvenirs VI*, "an opaline leather bottle about the size and colour of a mistletoe berry," a bottle with four pockets at least,

The Natural Philosophy of Love

held together by feeble sutures. The female receives this leather bottle, or spermatophore, and carries it off glued to her belly. Having got over the thunder-clap, the male gets up, makes his toilet ; the female browses as she walks. " From time to time she rises on her stilts, bends into a ring, seizes her opaline bundle in her mandibles, and chews it gently." She breaks off little pieces, chews them carefully, and swallows them. Thus while the fecundative particles are extravasated toward the eggs which they are to animate, the female devours the spermatic pouch. After having tasted it piece by piece she suddenly pulls it off, kneads it, swallows it whole. Not a scrap is lost ; the place is clear, and the oviscapte is cleaned, washed, polished. The male has begun to sing again, during this meal, but it is not a love-song, he is about to die ; he dies. Passing near him at this moment, the female looks at him, smells him, and takes a bite of his thigh.

Fabre was unable to see the mating of the green grasshopper, which takes place at night, but he observed the long preludes ; he has seen the slow play of soft antennæ. The result of the coupling is the same as with all locustians ; the female chews and swallows the genital ampulla. She is a terrible beast of prey who eats alive a huge cicada, who fearlessly sucks the entrails of a wriggling cockchafer. One cannot say whether she eats her male, dead or alive ; it is very probable for he is quite timid. Another defect, the Alpine analote, has given Fabre the alarming spectacle of a male lying on his back, a female on his belly, the genital organs joining end to end in this single contact, and while she was receiving the fecundative caress, the enigmatic female, with the fore part of her body raised, was gnawing with little mouthfuls, another male held in her claws impassive, his belly chewed open. The male analote is much smaller and weaker than the female ; like his confrère the spider, he flees with greatest

The Mechanism of Love

possible speed after the end of coition ; he is very often nipped. In the case observed by Fabre, the meal was doubtless the end of a preceding amour : these locustians have the habit, rare among insects, of receiving several suitors. Truly this cannibal Marguerite de Bourgogne is a fine type of beast, and gives a fine spectacle, not of immorality, an empty term, but of the serenity of nature, which permits all things, wills all things, and for whom there are neither vices nor virtues, but only movements and chemical reactions.

The spermatophore of the ephippiger is enormous, nearly half the size of the animal. The nuptial feast is finished according to the same rite, and the female, having consumed the leather-bottle spermatophore, adds thereto the poor emptied male. She does not even wait until he is dead ; she chops him up as he is dying, limb by limb : having fecundated her with all his blood, he must feed her with all his flesh.

This male flesh is doubtless remarkably comforting to the mother to be. Female mammifers, after delivery, devour the placenta. Different interpretations have been given to this habitual act. Some see a precaution against enemies : it is necessary to obliterate traces of a condition which clearly shows that one is feeble, defenceless, surrounded by young, a tasty prey at the mercy of any tooth ; others say it is a recuperation of energy. This latter opinion seems more likely, especially if one consider the habits of locustians. The spermatophore is indeed the preceding analogy to the placenta. On the other hand, fecundation, before being a specific act, belongs to the general phenomena of nutrition : it is the integration of one force in another force, and nothing more. The devouring of the male, partial or complete, represents, then, only the most primitive form of the union of cellules, this junction of two unities in one, which precedes the segmentation, feeds it, makes it possible

The Natural Philosophy of Love

during a limited time, after which a new conjunction is necessary. If the actual acts are only a survival, if they have lasted after their utility has disappeared, it is another question, and one which I leave again to experimenters. It will be enough for me if I have gained acceptance of the general principle that the acts of animals, whatever they may be, cannot be understood unless one strip them of the sentimental qualifications beneath which ignorant humanity has covered them, corrupting them with providential finalism.

While fully recognizing the immense social value of prejudices, analysis should be permitted to excoriate them and to grind them. Nothing appears more clear than maternal love, and nothing is more widespread throughout all nature: yet nothing gives a falser interpretation of the acts which these two words pretend to explain. A virtue is made of it, that is to say, in the Christian sense, a voluntary act; one seems to think that it depends on the mother to love or not to love her children, and those who relax or forget their motherly cares are considered culpable. Like generation, motherly love is a commandment; it is the second condition of the perpetuity of life. Mothers sometimes are without it; some mothers also are sterile: the will intervenes neither in one case nor in the other. Like the rest of nature, like ourselves, animals live submitted to necessity, they do what they ought to do, so far as their organs permit them. The mantis who eats her husband is an excellent egg-layer who prepares, passionately, the future of her progeny.

After Fabre's observations of couples of these insects caged, the female much stronger than the male mantes, come the predatory ones who do combat for love. The combats are deadly, the vanquished male is eaten at once. The male is bashful; at the moment of desire he limits himself to posing, to making sheep's eyes, which the female seems to consider with indifference

The Mechanism of Love

or disdain. Tired of parade, he finally decides, and with spread wings, leaps trembling upon the back of the ogress. The mating lasts five or six hours; when the knot is loosed, the suitor is, regularly, eaten. The terrible female is polyandrous. Other insects refuse the male when their ovaries have been fecundated, the mantis accepts two, three, four, up to seven; and eats them regularly after the act is accomplished. Fabre has seen better. The mantis is almost the only insect with a neck; the head does not join the thorax immediately, the neck is long and flexible, bending in all directions. Thus, while the male is enlacing and fecundating her, the female will turn her head back and calmly eat her companion in pleasure. Here is one headless, another is gone up to the corsage, and his remains still clutch the female who is thus devouring him at both ends, getting from her spouse simultaneously the pleasures *ac mensa ac thoro*, both bed and board from her husband. The double pleasure only ends when the cannibal reaches the belly: the male then falls in shreds and the female finishes him on the ground. Poiret has witnessed a scene perhaps even more extraordinary. A male leaps on a female and is going to couple. The female turns her head, stares at the intruder, and decapitates him with a blow of her jaw-foot, a marvellous toothed-scythe. Without disconcertion the male, wedges up, spreads himself, makes love as if nothing abnormal had happened. The mating took place, and the female had the patience to wait for the end of the operation before finishing her wedding breakfast.

The headless nuptials are explained by the fact that the insect's brains do not seem to have unique control of its movements; these animals can live without the cervical ganglion. A headless grasshopper will still lift his bruised foot to his mouth, after three hours, with the movement familiar to him in his complete condition.

Chapter 15

The Sexual Parade

Universality of the caress, of amorous preludes—Their rôle in fecundation—Sexual games of birds—How cantharides caress—Males' combats—Pretended combats of birds—Dance of the tetras—Gardener bird—His country house—His taste for flowers—Reflections on the origin of his art—Combats of crickets—Parade of butterflies—Sexual sense of orientation—The Great-Peacock moth—Animals' submission to orders of Nature—Transmutation of physical values—Rutting calendar.

ONE has convinced oneself in the preceding chapters that the games of love, preludes, caresses, combats are in no way peculiar to the human race. On nearly all rungs of the animal ladder, or rather on all the branches of the animal fan, the male is the same, the female is the same. It is always the equation given in the intimate mechanism of union of animalcule and ovule: a fortress toward which *amans volat currit ac lætatur*. The whole passage of the *Imitatio* (L. III, chap. iv, 4) is a marvellous psychological presentation of love in nature, of sexual attraction as it is felt throughout the whole series of creatures. The besieger must enter the fortress; he uses violence, sometimes gentle violence; more often trickery, the caress.

Caresses, charming movements, grace, tenderness—we do all these things of necessity, not because we are men but because we are animals. Their aim is to awaken the sensibilities, to dispose the organism to accomplish with joy its supreme function. They are, very probably, agreeable to the individual

The Sexual Parade

and they are perceived as pleasure only because they are useful to the species. This character of necessity is naturally more apparent in animals than in man. In animals the caress has fixed forms, of which the kiss, however, gives a good example ; the caress is an integral part of the cavalage. A prelude, but a prelude which cannot be omitted without compromising the essential part of the drama. It happens, however, that man, able to over-excite himself cerebrally, may abridge, or even neglect the prologue to coition : this is also noted in certain domestic mammals, the bull and stallion. The mere sight or smell of the other sex is doubtless enough to produce a state permitting immediate union. This is not the case with dogs, who are still more domestic, the two sexes give themselves up to play, to explorations, they demand each other's consent, courtship continues, sometimes the male, despite his condition, retreats ; more often the female works the drawbridge of her tail and closes the fortress. One knows the provocations of birds. M. Mantegazza has agreeably recounted the sexual play of two vultures, the females shut in the carcass of an almost devoured horse interrupted her pecking of carrion to groan deeply, turning her head to look up into the air. A male vulture soared above the larder, replying to the groans of the female. However, when the over-excited male descended toward the supposedly willing vulturess, she retreated into the carcass, and after a short dispute made him understand that the time was not yet ripe, and sent him off. After which the groans recommenced ; the female seemed annoyed ; she mounted the cage of bone, swelling her wings, lifting her tail, cooing. The union finally took place in a great commotion of ruffled feathers and shaken bones.

The same author has precisely noted the complicated preludes indulged in by two sparrows. I give the résumé, graphically :

The Natural Philosophy of Love

a troop of sparrows on the roof in the morning ; calm, they make their toilet. Arrives a large male who emits a violent cry ; one of the females replies at once, not by a cry but by an act : she leaves the group. The male joins her, she flies to a neighbouring roof ; there follows a long chatter beak to beak. New flight ; the male rests in the sun, then rejoins the minx. The assaults begin, the male is repulsed. The female moves off, in little hops. The edge of the roof stops the flight, she profits by this excuse and surrenders.

But it is the prodigious insect whom one must interrogate. One knows the cantharides, these beautiful coleoptera on whom pharmacy has inflicted so wicked a reputation. The female gnaws her oak leaf, the male arrives, mounts her back, enlaces her with his hind feet. Then with his stretched abdomen he flagellates the female alternately to right and left with frantic speed. At the same time he massages her, lashes her neck furiously with his front feet, all his body shakes and vibrates. The female remains passive, awaiting the calm. It comes. Without letting go the male stretches out his forelegs in a cross, unbends a little, wagging from head and corselet. The female starts eating again. The calm is short ; the male's follies recommence. Then there is another manœuvre, with the fold of his legs and tarses, he seizes the female's antennæ, forces her to lift her head, at the same time redoubling the lashing of her flanks. New pose ; new start of the flagellation : finally the female opens. The coupling lasts a day and a night, after which the male falls, but remains knotted to the female who drags him from leaf to leaf, the penis attached to her organs. Sometimes he also takes a mouthful here and there ; when he drops off it is to die. The female lays the eggs and dies in her turn. The cerocome, an insect akin to the cantharis, has analogous habits, but the female is even colder,

The Sexual Parade

and the male is obliged to tap more than once before getting an answer. In vain he beats the sides of his chosen companion with his paws, she remains insensible, inert. This action, moreover, has the full appearance of having passed to a state of mania in the male muscles, so much so that, in default of females, males mount and pummel each other. As soon as a male is charged by another male he takes the female attitude and remains quiet ; one sees pyramids of three or four males ; in which case the top one is the only one wildly waving his feet ; the others remain immobile, as if their position of mounts transformed them into passive animals : probably because their muscles are pinned down.¹

It is rare for a female to assist the male in his work, but there remains the obstacle of the other males. Contrary to what one might think, there is no relation between the male's social character and his amorous character. Ferocious animals show themselves at the moment of love-making much more placid than gentle or even timid animals. The rabbit is an impetuous, tyrannous and jealous lover ; if the female does not accede to his first desire, he rages. She is, moreover, very lascivious and gestation in no way interrupts her amours. The hare, who does not pass for audacious, is an ardent and heady lover ; he fights furiously with his peers for the possession of a female. They are animals very well equipped for love, the penis greatly developed, clitoris almost as large. The males make real voyages, run for entire nights in search of the doe-hare who is sedentary : like the doe-rabbit, she never refuses, even when pregnant.

Martens, polecats, sables, rats fight violently during the rutting season. Rats accompany their fights with sharp cries. Stags,

¹ For these two observations see Fabre, *Souvenirs*, Vol. II. *Cérocotes mylabres et zoniitis*.

The Natural Philosophy of Love

wild boars, and a great number of other species fight to the death for the possession of females ; a practice not unknown to humanity. Even heavy tortoises feel exasperation from love ; the defeated male is tilted on to his back.

Destined perhaps for a superior and charming civilization, birds like combat ; sometimes the duel is serious, as in cock-fights, often it is a courtesy, a mimicry. The female of the rock-cock of Brazil is tawny and without beauty, the male is yellow-orange, with crest bordered in deep red, the long wing feathers and tail feathers are red-brown. One sees the females ranged in a circle like a crowd about jugglers, the males strutting, cutting capers, moving their colour-shot feathers, getting themselves admired and desired. From time to time a female admits that she is moved, a couple is formed. But the tetras, heather-cocks of North America, have still more curious customs. Their fights have become exactly what they have with us, that is, dances. It is no longer the tourney, it is the tour-de-valse. What completes the proof that these parades are a survival, a transformation, is that the males, being amused by them, perform them not only before but after coupling. They even practise them for diversion while the females are sitting on the eggs, absorbed in maternal duty. Travellers thus describe the tetras' dance (Milton and Cheadle, *Atlantic to Pacific*): " They gather, twenty or thirty in a chosen place, and begin to dance like mad. Opening their wings, they draw together their feet, like men doing the *danse du sac*. Then they advance toward each other, do a waltz turn, pass to a second partner, and so on. This contre-danse of prairie chickens is very amusing. They become so absorbed in it that one can approach quite near."

Birds of Australia and New Guinea make love with a charming ceremony. To attract his mistress the male makes a veritable country-house, or, if he is less skilful, a rustic bower of greenery.

The Sexual Parade

He plants rushes and green sprigs, for he is small, about the size of a blackbird; he bends them into a vault, often a yard long. He strews the floor with leaves, flowers, red fruits, white bits of bone, bright pebbles, bits of metal, jewels stolen in the neighbourhood. They say that when Australians miss a ring or a pair of scissors, they search these green tents. Our magpie shows a certain taste for bright objects: people tell tales about him. The "gardener-bird" of New Guinea is still more ingenious, to such a degree that his work is mistaken for human work and people are deceived thereby. With his beak and claws he manages as well and better than natives, often showing a decorative taste which they lack. People search for the "origin of art": there you have it, in the sexual game of a bird. Our æsthetic manifestations are but a development of this same instinct to please which, in one species over-excites the male, in another moves the female. If there is a surplus it will be spent aimlessly, for pure pleasure: that is human art; its origin is that of the art of birds and insects.

The *Grande Encyclopédie* has given a picture of the gardener-bird's pleasure house. He is called in most scholarly parlance the *Amblyornis inornata*, because he is lacking in personal beauty. One would take his house for the work of some intelligent delicate pygmy. We find the description of it, after the Italian traveller, M. O. Beccari.¹ "In crossing a magnificent forest M. Beccari found himself suddenly in the presence of a little conical cabin, in front of which was a lawn strewn with flowers; he at once recognized the sort of hut which M. Bruijn's huntsmen had described to him as the work of a dark bird somewhat larger than a blackbird. He made a very exact sketch of it, and verifying the native's tales by his own observation, he found

¹ The title of his study is curious: *Les Cabanes et les jardins de l'Amblyornis*. (*Annales du Musée d'histoire naturelle de Gènes*, 1876.)

The Natural Philosophy of Love

out how the bird makes this building which is not so much a nest as a pleasure house. The amblyornis chooses a little clearing with unbroken lawn and a small tree in the middle. Around this tree or bush which serves as axis, the bird places a little moss, then he places slantwise the branches of a plant which will continue to grow for some time ; juxtaposition of branches form the inclined walls of the hut. On one side they are left open to make a doorway, before which is the garden whose elements are gathered with difficulty, tuft by tuft, at some distance. After having carefully cleaned the lawn, the amblyornis sows it with flowers and fruits which he collects in the neighbourhood, and which he renews from time to time." This primitive gardener belongs to the bird of Paradise family, remarkable for the beauty of their plumage. It seems that not being able to dress himself, he has exteriorized his instinct. According to travellers, these cabins are true houses of rendezvous, the country-boxes of the seventeenth century, the " follies " of the eighteenth. The gallant bird ornaments it with everything that might please the invited female ; if she is satisfied, it is the abode of love, after having been that of declarations. I do not know whether these oddities have been given the importance which they should have been, in the history of birds and of humanity. The scholar, the only person knowing such details, usually fails utterly to understand them. One savant whom I read, thinks of the thieving magpie, and adds, these traits which are common to them ally them closely to birds of Paradise and corvida. Doubtless, but that is not very important. The grave fact is the gathering of the first flower. The useful fact explains animality ; the useless fact explains man. Now, it is of capital importance to show that the useless fact is not peculiar to man alone.

Crickets also have courting fights, but perhaps for a different

106

The Sexual Parade

reason: the feebleness of their offensive weapons, and the solidity of their armour. There is, however, a winner and loser. The loser decamps, the conqueror sings; then he shines himself, stamps, seems nervous. Fabre says that emotion often renders him mute; his wing-shells shake without giving a sound. The female cricket, witness of the duel, runs to hide under a leaf as soon as it is over. "She draws back the curtain a little, and looks out, and wants to be seen." After this play, she shows herself completely, the cricket rushes forward, makes a half-turn, rears up and slides under her belly. The work finished, he gets away as fast as possible, for we are before an enigmatic orthopter, the female is quite ready to eat him. It is the male's song which attracts the female cricket. When she hears it, she listens, takes her bearings, obeys the call. It is the same with cicadas, even though the two sexes usually live side by side. By imitating the sound of the male, one can deceive the females and make them approach.

Sometimes sight, sometimes smell guides the male. Many hymenoptera, furnished with a powerful visual organ, keep watch for the females, spying the vicinity; thus also many butterflies. When the male notices a female, he pursues in order to get in front of her, to be seen, and he seems to tempt her with slow waving of his wings. This display lasts often quite a long time. Finally their antennæ touch, their wings stroke each other, and they fly off in company. The coupling often takes place in the air. Thus also, among pieridina; in certain species, bombyx for example, the females are heavy and even wingless, the male who is in contrast lively, fecundates several, going from one to the other, which is doubtless what gives butterflies their reputation for inconstancy. They live too short a time to deserve it: many born in the morning do not see the next day's sun. One might rather make them a symbol for pure

The Natural Philosophy of Love

thought. There are some who do not eat, and among those who do not eat there are some whom nature has vowed to virginity. Hermaphrodites of a singular sort, male on the right side, female on the left, they seem to be two sexual halves welded together along the medial line. The organs whose centre is cut by this line are but demi-organs good for nothing save the entertainment of observers. Hybrid butterflies, produced by crossing of two species, are not very rare ; they also are incapable of reproduction.

The coupling of butterflies lasts only a few minutes ; among moths it is often prolonged for a day and a night, as in the hawk-moths. If it is a reward, it is due to their long courageous voyages in quest of the female whom they have divined. The Great-Peacock moth covers several leagues of country in the attempt to satisfy his desire. Blanchard tells of a naturalist who having caught a female bombyx and put her in his pocket, returned home escorted by a cloud of over two hundred males. In spring, in a place where the Great-Peacock is so rare that with difficulty one or two a year can be found, the presence of a caged female will draw a hundred males, as Fabre has shown by experiment. These feverish males are endowed with very brief ardour. Whether or no they have touched a female, they live but two or three days. Enormous insects, larger than a humming-bird, they do not eat ; their mouths are merely an ornament, a decoration : they are born to reproduce and to die. The males seem infinitely more numerous than the females, and it is probable that not more than one in an hundred can accomplish his destiny. He who misses the pursued female, who arrives too late, is lost : his life is so short that it would be very difficult for him to discover a second. It is true that in normal circumstances the female should stop emitting her sexual odour as soon as she has been ridden ; the males are thus attracted by

The Sexual Parade

the same female through a proportionately shorter time and there is this much less chance of their searches being unfruitful. Is it their sense of smell alone that guides them?

At 8 a.m. at Fabre's place in Serignan, the cocoon of a Lesser-Peacock moth was seen to open; a female emerged and was immediately imprisoned in a wire cage. At noon a male arrived, the first that Fabre, who had lived there all his life, had ever seen. The wind was blowing from the north. The male came from the north, that is to say, against the scent. By two o'clock ten had arrived. Having come as far as the house without hesitation, they were troubled, got the wrong window, wandered from room to room, never went directly toward the female. One would say that at this point they should have used another sense, perhaps sight, despite their being crepuscular creatures, or that the cage bothered them. Perhaps also it is the custom for the female to come and play before them? It is, in any case, evident that sense of smell plays an important rôle; the mystery would not be less great if one supposed the bringing into play of a special sense, that of sexual orientation. Fabre has obtained equal success with the female of a very rare butterfly, the oak bombyx, or banded minime: in one morning sixty males arrived, turning about the prisoner. One has observed analogous if not identical things in certain serpents, in mammals: everyone has seen dogs in the country, drawn by a female in heat, coming from a considerable distance, some miles, without any indication of how their organism had got the news.

Explanations are vain in these matters; they divert the curiosity without satisfying the reason. What one sees clearly is that the act must be accomplished; to this end, all obstacles, whatever they are, will be overcome. Neither distance, nor the difficulty of the voyage, nor the danger of the approach can

The Natural Philosophy of Love

drive back the instinct. In man, who has sometimes the power to escape the sexual commandments, disobedience may have happy results. Chastity, as a transmuter, may change unused sexual energy into intellectual or social energy ; in animals this transmutation of physical values is impossible. The compass needle remains in one immutable position, obedience is un-escapable. That is why there is so deep a rumble in nature when the spring orders are posted. Vegetable flowers are not the only ones to open : sexes of flesh also flower. Birds and fish take on new and more vivid colours. There are songs, plays, pilgrimages. Salmon who live quietly at the river-mouths, must gather, depart, climb the streams, pass weirs, scramble against rocks which form the dams and cataracts, wear themselves out leaping as arrows against all human and natural obstacles. Males and females arrive worn out at the end of their journey, the spawning place of fine sand where the females are to lay their eggs, and the males heroically to spend the milt distilled from their blood.

Spring is not the only rutting season. Love's calendar covers the year. In winter, wolves and foxes ; in spring, birds and fish ; in summer, insects and many mammals ; in autumn the deer. Winter is often the season chosen by polar animals ; the sable couples in January ; the ermine in March ; the glutton, at the beginning and end of winter. Domestic animals have often several seasons ; for the dog, cat and house-birds, spring and autumn. One finds young otters at any time. Most insects die after mating ; but not all hemiptera, nor the queen bee, nor certain coleoptera, nor certain flies. The stag and the stallion empty themselves, but not the ram, nor the bull nor the he-goat. The duration of pregnancy in placentaries seems to have some relation to the size of the animal ; mare, eleven to twelve months ; ass, twelve months and a half ; cow and doe, nine months ; sheep,

The Sexual Parade

goat, wolf, vixen, five months ; sow, four months ; bitch, two months ; cat, six weeks ; rabbit, one month.

There are oddities : fecundated in August, the doe is not delivered until seven and a half months later, the embryo remaining a long time stationary, and waiting for the spring to start again. In the she-bat ovulation does not take place until the end of winter, although she has received the male in the autumn : females caught during hibernation have the vagina swollen with inert sperm which does not act until the spring awakening.

Chapter 16

Polygamy

Rarity of monogamy—Taste for change in animals—Rôles of monogamy and polygamy in the stability or instability of specific types—Strife of the couple against polygamy—Couples among insects—Among fish, batrachians, saurians—Monogamy of pigeons, of nightingales—Monogamy in carnivores, in rodents—Habits of the rabbit—The ichneumon—Unknown causes of polygamy—Rarity and superabundance of males—Polygamy in insects—In fish—In gallinaceæ, in web-footed birds—In herbivores—The antelope's harem—Human polygamy—How it tempers the couple among civilized races.

THERE are no monogamous animals save those which love only once during their lifetime. Exceptions to this rule have not sufficient constancy to be erected into a counter-rule. There are monogamists in fact, there are none of necessity from the time an animal lives long enough to commit the reproductive act several times. Free female mammals nearly always flee the male who has once served them, they need a new one. A bitch does not receive last season's dog save in direst extremity. This appears to me to be the struggle of the species against variety. The couple is the maker of varieties; polygamy drags them back to the general type of the species. Individuals of a species frankly polygamous should present a very great similarity; if the species incline toward a certain monogamy, the dissemblances become more numerous. It is not an illusion which makes us recognize in human races almost monogamous a lesser uniformity of type than in polygamous societies or those given over to promiscuity, or among animal species. The example of the

Polygamy

dog seems the worst that one could have chosen. But it is the best, considering that in receiving successively individuals of different variety, the bitch tends to produce individuals not of a specialized breed, but on the contrary of a type where several breeds will be mixed, individuals which in crossing and re-crossing in their turn, will end, if the dogs live in a free state, in forming one single species. Sexual liberty tends to establish uniformity of type ; monogamy strives against this tendency and maintains diversity.¹ Another consequence of this manner of seeing is that one must consider monogamy as favourable to intellectual development, intelligence being a differentiation which accomplishes itself more often in proportion as there are individuals and groups who differ physically. Physical uniformity engenders uniformity of sensibility, thence of intelligence ; this does not need to be explained ; now, intelligences count and mark only their differences ; uniform, they are as if they were not ; impotent to hook themselves one to the other, to react against each other, lacking asperities, lacking contrary currents. This is the flock, in which each member makes the same gesture of flight, of biting, or of roaring.

Neither the conditions of absolute monogamy, nor those of absolute promiscuity seem to be found at present in humanity, nor among animals ; but one sees the couple, in several animal and human species, either in state of tendency, or in state of habit. More often, especially among insects, the father, even if he survives it a little while, remains indifferent to the consequences of the genital act. At other times the fights between males so reduce their number that a sole male remains the master and servant of a great number of females. So one must

¹ That is to say in the eye of some imaginary divinity who might be supposed to regard humanity, or even the slower mammals from a timeless or say five century altitude.—Translator's note.

The Natural Philosophy of Love

distinguish between true and successive polygamy ; between the monogamy of one season, and that of an entire lifetime ; and finally one must set apart those animals who make love only once, or during one season which is followed by death. These different varieties and nuances demand methodical classification. It would be a long work, and would perhaps not attain true exactitude, for in animals, as in man, one must count with caprice in sexual matters : when a faithful dove is tired of her lover, she takes flight, and soon forms a new couple with an adulterous male. The couple is natural, but the permanent couple is not. Man has never bent to it, save with difficulty, even though it be one of the principal conditions of his superiority.

The breasts of the male do not seem to prove the primordality of the couple in mammals. Although there are authentic examples of a male having given suck, it is difficult to consider the male udder as destined for a real rôle, or for an emergency milking.¹ This replacement has been too rarely observed to be used as a basis of argument. Embryology gives a good explanation of the existence of this useless organ. A useless instrument is, moreover, quite as frequent in nature as the absence of a useful instrument. Perfect concordance of organ and act is rare. In the case of insects who live but for one love-season, sometimes for two real seasons if they can benumb themselves for the winter, polygamy is nearly always the consequence of the rarity of males, or the superabundance of females. Space is too vast, food too abundant for there to be truly deadly combats between males. Moreover, their love accomplished, the

¹ One believes nevertheless that the male bat suckles one of the two young that the couple regularly produces. But these animals are so odd and so heteroclit that this example, if it is authentic, would not be a decisive argument.

Polygamy

minuscule folk ask only to die, the couple is formed only for the actual time of fecundation, the two animals at once resume their liberty, that is for the female to deliver her eggs, and for the male to languish, and sometimes to cast a final song to the winds. There are exceptions to this rule, but if we look upon the exceptions with the same gaze as on the rule, we should see in nature only what we see on the surface of a river, vague movements and passing shadows. To conceive some reality, one must conceive a rule, first, as an instrument of vision and of measure. With most insects the male does nothing but live; he deposits his seed in the female receptacle, flies on, vanishes. He does not share any of the labours preparatory to laying. Alone the female sphex engages in her terrible and clever strife with the cricket, whom she paralyzes with three stabs of her dagger in his three moto-nervous centres; alone she hollows the oblique burrow at the bottom of which live her larvæ; alone she adorns it, fills it with provisions, closes it. Alone the female cerceris heaps up in the deep gallery the stunned weevils and fruit of her excavations, larder for her progeny. Alone the she-osmie, she-wasp, she-philanthe—one would have to cite nearly all the hymenoptera. One understands better, when the insect deposits her eggs by chance, without prefatory manœuvres, or by special instruments, that the male co-operation is lacking; only the female cicada can sink her clever burrow in the olive bark.

There are, however, couples among insects. Among coleoptera there are the "purse-maker," the necrophore. Stercorian geotrupes, lunar copris, onitis bison, sisypus, work soberly side by side preparing the larder for their coming families. In these cases, the male seems master, he directs the manœuvres in the complicated operations of the necrophores. A couple get busy about a corpse, say of a field mouse; nearly always one or two

The Natural Philosophy of Love

isolated males join them, the troop is organized, the chief engineer explores the territory and gives orders. The female awaits them, motionless, ready to obey, to follow the movement. As soon as there is a couple the male necrophore commands. The male assists the female during the work of arranging the cell and the laying. Most purse-makers, sisyphus or copris make and transport together the pill which serves as food for the larvæ ; their couple is just like that of birds. One might believe that in this case monogamy is necessitated by the nature of the work ; not at all ; the male in other quite closely related species, the sacred scarab, for example, leaves the female alone to build the excremental ball in which she encloses her eggs.

Coming up to vertebrata one finds also certain examples of a sort of monogamy : when the male fish serves as hatcher for his own eggs, either carrying them in a special pouch, or heroically sheltering them in his mouth. This is rare, since, usually, the two sexes of fish do not approach each other, do not even know each other. Batrachians, on the contrary, are monogamous ; the female does not lay save under male pressure, and it is so slow an operation, preceded by such long manœuvres, that the whole season is filled with it. The male of the common toad rolls the long chaplet of eggs about his feet as soon as it is divided, and goes in the evening to place it in the neighbouring pool. Nearly all saurians seem also to be monogamous. Lizards form a couple said to last several years. Their amours are ardent, they clasp each other closely belly to belly.

Birds are generally considered monogamous, save gallinaceæ and web-footed birds ; but exceptions appear so numerous that one would have to name the species one by one. The fidelity of pigeons is legendary, and is perhaps only a legend. The male pigeon certainly has tendencies to infidelity and even to polygamy. He deceives his companion ; he goes so far as to inflict

Polygamy

upon her the shame of having a concubine under the conjugal roof! And these two spouses, he tyrannizes over them, he enslaves them by beating. The female, it is true, is not always of an easy disposition; she has her caprices. Sometimes, refusing her mate, she deserts him and gives herself to the first comer.

One will not find here any of the zoological anecdotes on the industry of birds, their union in devotion to the species. The habits of these new-comers in the world are very unstable; yet among certain gallinaceæ, monogamous by exception like the partridge, the males seem pulled by contrary desires, they undergo the couple rather than choose it, and their share in the rearing of young is often very slight. One has seen the male red partridge, after mating, abandon his female and rejoin a troop of male vagabonds. The nightingales, a perfect pair, sit on the eggs turn by turn. The male, when the female comes to relieve him, remains near by and sings until she is comfortably settled on the eggs. Still more devoted is the male talegalla, a sort of Australian turkey. He makes the nest, an enormous heap of dead leaves; when the female has laid, he watches the eggs, comes from time to time to uncover them for exposure to the sun. He takes his share of watching the young, sheltering them under leaves until they are able to fly.

Of mammals, the carnivora and rodents often practise a certain, at least temporary, monogamy. Foxes live in couples, and educate the young foxes. One finds their real habits in the old story of Renard the Fox: Renard goes vagabond-hunting for prey and windfalls, while Madame Hermeline, his wife, waits at home, in her bower at Maupertuis. The vixen teaches her children the art of killing and dividing; their apprenticeship is made on the still living game which the male purveyor has brought to the house. The rabbit is very rough

The Natural Philosophy of Love

in love ; the hamster, another rodent, often becomes carnivorous during the rutting season ; they say that he is quite ready to eat his young, and that the female, fearing his ferocity, leaves him before delivery. These aberrations are exaggerated in captivity, and affect even the female. The doe-rabbit sometimes eats her young ; this happens especially when one has the imprudence to touch or even to look too closely at the young rabbits. This is enough to bring on a violent disturbance of maternal sentiment. The same dementia has been observed in a vixen who had kitted in a cage ; one day someone passed, and looked steadily at the young foxes, a quarter of an hour later they were throttled.

Various explanations are given for this practice among doe-rabbits, the simplest being that they are driven by thirst to kill the young in order to drink the blood. This is rather Dantesque for doe-rabbits. They say also, regarding both wild and tame rabbits, that the female when surprised kills the young because she has not industry like the doe-hare, cat, or bitch, to transport them to some other place or to save at least one by the scruff of its neck. The third explanation is that, devouring the after-birth, like nearly all mammals, and this from physiological motive, the doe-rabbit acquires a taste and continues the meal, absorbing the young as well. Without rejecting any of these explanations one may present several others. First, it is not only the females who eat the young, the males are equally given to it. Being very lascivious, the male rabbit tries to get rid of his young in order to stop suckling and have his female again. On the other hand, it is a regular fact that as soon as she has retaken the habit of having the male, the mother rabbit, even if she is still giving suck, at once ceases to recognize her offspring, her brief ideas being already turned toward her coming family. Different causes may engender identical acts, and different

Polygamy

lines of reasoning bring the same conclusions. There is reasoning in this case of the rabbit ; there is no reasoning save in case of initial error when there is trouble in the intellect. This trouble and the final massacre is all that one can state definitely : the reasoning escapes our analysis.

Is the rabbit really monogamous? Perhaps, with a monogamy for the season, or from necessity. The male in any case pays no attention to the young, unless it be to throttle them ; thus the female, as soon as she is gravid, takes refuge in an isolated burrow. Their coupling, which occurs especially toward evening, is repeated as often as five or six times an hour, the female crouching in a particular manner ; the break away is very sudden, the male throwing himself back sideways and uttering a short cry. What really makes one doubt the monogamy of the rabbit is that one male is enough for eight or ten females, that he is a great runner, that the males have murderous fights among themselves. Doubtless each species must be taken separately. Buffon asserts that in a warren the oldest buck-rabbits have authority over the young. An observer of rabbit habits, M. Mariot-Didieux, admits this trait of superior sociability in angoras, which is just the species Buffon had studied.

Buck-rabbits have still other aberrations, game-keepers say that they pursue doe-hares, tire them and wear them out by their lustiness ; it is certain that these couplings give no result.

The Egyptian ichneumon lives in families. It is very interesting to see them on a hunting expedition, first the male, then the female, then the young in Indian file. Female and young do not take their eyes off father, and imitate all his gestures with care : one might think the train was a large serpent moving in reeds.

The Natural Philosophy of Love

The wolf who, like the fox, lives in pairs, helps his female and feeds her, but he does not know his young and will eat them if they come to hand. Certain great apes, gibbon and orang are temporarily monogamous.

Polygamy would be explained by the rarity of males ; which is not the case with most mammals, among whom the males are almost always more numerous. Buffon was the first to note this predominance ; but neither he, nor anyone since, has given a satisfactory explanation. People have said that in man, at least, the elder parent gives the sex to the offspring, and the more surely as the difference in age is greater, but, by this reckoning, one would have almost nothing but males. People have also said that the younger the woman, the more likely the child to be male ; the early marriages of the past are supposed to have yielded more males than the late marriages of the present. None of these statements is serious. What remains past doubt is that European humanity, to consider only that, gives an excess of males. The general average is about 105, with extremes of 101 in Russia, and 113 in Greece ; the French average is the same as the general average. One has not been able to make out, in these variations, either influence of race, climate, taxes, nationality, or anything else in particular. There are more male humans, more male sheep : it is a fact which, being regular, will be difficult to explain.

We find here superabundance, there penury of males, but neither does the abundance determine the customs, nor is it likely the lack of males would do so. There are so few males among gnats that Fabre was the first to recognize them, the proportion being about one male to ten females. This in no way produces polygamy, for the male dies the instant after coupling. Nine out of ten gnat females die virgin, even without having seen a male, without knowing that males exist : perhaps celibacy

Polygamy

augments their ferocity, for it is the female gnat and she alone who sucks our blood. One supposes also that female spiders outnumber the males ten or twenty to one: perhaps the buck who has escaped the jaws of one mistress has the courage to risk his life yet again? It is possible that the male spider who survives his amours may live on for several years. Polygamy seems to exist, and in its most refined form, with one species, the trap-door spider, whose males are peculiarly rare. The female digs a nest in the earth, into which the male descends; he lives there some time, then he leaves, comes back: there are several houses between which he divides his time equitably.

The polygamy of a curious little fish, the stickleback, is of the same sort, although more naïve. The male builds a grass nest, then goes in search of a female, brings her back to the nest, invites her to lay; scarcely has his first companion departed than he brings in another. He only stops when there is a satisfactory treasure of eggs, then he fecundates them in the usual manner. Thenceforward he guards the nest against malefactors, and watches the hatching. In the odd reversal of rôles, the young recognize their father; their mother may be the fish passing between them, or the one gliding off like a shadow, or the one chewing a grass blade. When the stickleback world becomes reasonable, that is to say absurd, their philosophers will demand "Why should the father alone be charged with the education of his offspring?" Up to the present one knows nothing except that he educates them with joy and affection. Among sticklebacks and among men there is no answer to such a question save the answer given by facts. One might as well ask why humanity is not hermaphrodite like the snails, who strictly divide the pleasures and burdens of love, for all snails commit the male act, and all lay. Why has the female ovaries, and the male testicles; and this flower pistils,

The Natural Philosophy of Love

and that one stamens? One ends in baby-talk. The wish to correct nature is unnecessary. It is hard enough to understand her, even a little, as she is. When she wishes to establish the absolute responsibility of the father, she establishes the strict couple, and especially, absolute polygamy. The pigeon is no longer certain of being the father of his young; the cock cannot doubt it, he being the sole male among all his hens. But nature has no secondary intentions, she keeps watch that, temporary or durable, fugitive or permanent, the couples are fecund; that is all.

Gallinacæ and web-feet are the birds best known and most useful to us. They are nearly all polygamous. The cock needs about a dozen hens, he can do with a much larger number, but in that case his ardour wears itself out. The duck, very licentious, is accused of sodomy; not only is he polygamous, but anything will serve him. He might better be a natural example of promiscuity. A gander is good for ten or twelve geese, the cock-pheasant for eight or ten hens. The black grouse needs many more, he leads a sultan's harem behind him. At dawn, in the season of amours, the male starts whistling with a noise like steel on a grindstone, simultaneously stretching himself up, and spreading the fan of his tail, opening and puffing his wings. When the sun clears the horizon he rejoins his females, dances before them, while they devour him with their eyes, then he mounts them, according to his caprice, and with great vivacity.

Polygamy is the rule among herbivora; bulls, bucks, stallions, bison are made to reign over a troop of females. Domesticity changes their permanent polygamy into successive polygamy. Stags go from female to female without remaining constant to any; the females follow this example. A species immediately akin gives, on the contrary, an example of the couple; the

Polygamy

roebuck and his doe live in family, and bring up their young until these are ready to mate. The male of a certain Asian antelope needs more than a hundred docile females. Naturally, these harems can only be formed by the destruction of other males. This hundred females represents possibly more than a hundred males put out of the business, males being always the more numerous sex among mammals. The utility of such hecatombs to the race is not certain. Doubtless one may suppose that the surviving male is the strongest, or one of the strongest of his generation ; that is the lucky element, but whatever his vigour it may be expected to wane at some point or other before a hundred females desiring satisfaction. Some females are forgotten, others fecundated in moments of weariness : for a certain number of good products, there are a number of mediocre creations. True, these are destined, if male, to perish in future combats ; but if they are female, and if they receive the favours of the chief, this system might have for consequence the progressive degradation of the species. It is, however, probable that the necessary equilibrium is re-established ; combats between females, combats of coquetry, incitements of femininity, doubtless take place, and it is the triumph of the malest male and of the most female females.

Virey asserts, in Détérville's *Nouveau dictionnaire d'histoire naturelle*, that the greater polygamous apes get on very well with native women. It is possible, but no product has ever been born of these aberrations, which we must leave to theological works on *bestialitas*. Men and women, even of Aryan race, have at times set out to prove the radical animality of the human species by the peculiarity of their tastes. The interest in these matters is chiefly psychological, and if one can draw no proof of evolution from the chance relations between woman and dog, man and goat, the coupling of primates of different orders offers no

The Natural Philosophy of Love

evidence either. There is, however, a relation between man and ape, it is that they are both divisible into polygamists and monogamists, at least temporary ; but this does not differentiate them from most other animal species.

In most human races there is a radical polygamy, dissimulated under a show-front of monogamy. Here generalizations are no longer possible, the individual emerges and with his fantasy upsets all observations, and annihilates all statistics. The monogamist's brother may be polygamous. A woman may know only one man, while her mother was everyone's fancy. One may assert the universal custom of marriage and deduce monogamy as a conclusion, and this will be false or true according to the epoch, milieu, race, moral tendencies of the moment. Moral codes are essentially unstable, since they represent only a handbook ideal of happiness ; morality will modify itself according to the mobility of this ideal.

Physiologically, monogamy is in no way required by the normal conditions of human life. Children? If the father's help is necessary it can be exercised over the children of several women as well as over those of one woman only. The duration of tutelage among civilized people is, moreover, excessive ; it is dragged out, when it is a matter of certain careers, almost until ripe age. Normally puberty ought to liberate the young human, as it liberates the young of other mammals. The couple need then last only ten or fifteen years ; but female fecundity accumulates children at yearly intervals, so that, as long as the father's virility lasts, there might be always one feeble creature having the right to demand protection. Human polygamy could, then, never be successive polygamy save by exception, that is, if man were an obedient animal, submitting to normal sexual rules, and always fecund ; but this successivity is frequent and divorce has legalized it. The other and true polygamy,

Polygamy

polygamy actual, temporary or permanent, is still less rare among people of European civilization, but nearly always secret and never legal ; it has for corollary a polyandry exercised under the same conditions. This sort of polygamy is very different from that of Mormons, Turks, gallinaceæ and antelopes, it is nothing more than promiscuity. It does not dissolve the couple, in diminishing its tyranny it renders it more desirable. Nothing so favours marriage, and consequently, social stability, as the *de facto* indulgence in temporary polygamy. The Romans well understood this, and legalized concubinage. One cannot here deal with a question so remote from natural questions. To condense an answer into the briefest possible space, one would say that man, and principally civilized man, is vowed to the couple, but only endures it on condition that he may leave and return to it at will. This solution seems to conciliate his contradictory tastes, and is more elegant than the one offered by divorce, which is always the same thing over again ; it is in conformity not only with human, but also with animal tendencies. It is favourable to the species, in assuring the suitable upbringing of children, and also to the complete satisfaction of a need which in a state of civilization, is inseparable either from æsthetic or sentimental pleasure.

Chapter 17

Love Among Social Animals

Organization of reproduction among hymenoptera—Bees—Wedding of the queen—Mother bee, cause and consciousness of the hive—Sexual royalty—Limits of intelligence among bees—Natural logic and human logic—Wasps—Bumble-bees—Ants—Notes on their habits—Very advanced state of their civilization—Slavery and parasitism among ants—Termites—The nine principal active forms of termites—Great age of their civilization—Beavers—Tendency of industrious animals to inactivity.

SOcial hymenoptera, bumble-bees, hornets, wasps, bees, have peculiar love customs very different from those of other animal species. It is not monogamy, since one finds in it nothing resembling the couple ; nor polygamy, since the males know only one female, when they have even that adventure, and since the females are fecundated for the whole of their life by a single fecundation. It is, rather, a sort of matriarchate, even though the queen-bee is not generally the mother of more than a part of the hive over which she rules, the other part having sprung from the queen who has gone off with the new swarm, or from the one who has remained in the former hive. In very numerous hives there are about six or seven hundred males to one female. Copulation takes place in the air ; as is the case with ants, it is only possible after a long flight has filled with air the pouches which cause the male's organ to emerge. Between these pockets, or aeriferous bladders shaped like perforated horns, emerges the penis, a small white body, plump and bent back at the point. In the vagina, which is round, wide and shallow,

126

Love Among Social Animals

the sperm-pouch opens ; it is a reservoir which can contain, they say, a score of million of spermatozoids destined to fecundate the eggs, during several years in proportion as they are to be laid. The form of the penis and the manner in which the sperm is coagulated by a viscous liquid into a veritable spermato-phore, cause the death of the male. The copulation ended, he wishes to disengage himself, but only manages to do so in leaving in the vagina not only the penis but all the organs attached to it. He falls like an empty bag while the queen, returned to the hive, stops at the entrance, makes her toilet, aided by the workers who crowd about her : with her mandibles she gently removes the spine which has remained in her belly, and cleans the place with lustral attention. Then she enters the second period of her life, maternity. This penis which remains fast in the vagina makes one think of the darts of fighters which also remain in the wound ; be it love or war the over-courageous beastlet expires, worn out and mutilated ; there is in this a peculiar facility of dehiscence which seems very rare.

The wedding of the queen-bee remained a long time absolutely mysterious, and even to-day there are very few observers who have been even distant witnesses of it. Réaumur, having isolated a queen and a male, witnessed a play or combat with movements which he interpreted with ingenuity. He could not see the actual coupling, which only takes place in the air. His story is unique and nothing since has confirmed it. He shows us a queen approaching a male, sucking him with her proboscis, offering him honey, stroking him with her feet, and finally, irritated by the coldness of her suitor, mounting his back, applying her vulva to the male organ, which Réaumur describes very well (*Memoires*, Vol. V) and which he represents as covered with a white viscous liquid. The real preludes, at least in a state of liberty, contradict the great observer. The female

The Natural Philosophy of Love

seems in no way aggressive. Here are the three authentic accounts I have been able to discover :

"6th July, 1849, M. Hannemann, bee-keeper at Wurtemberg, Thuringia, was seated near my hive when his attention was aroused by an unaccustomed buzzing. Suddenly he saw thirty or forty drones " (i.e. false drones, male bees) " rapidly pursuing a queen-bee, about twenty or thirty feet up in the air. The group filled a space about two feet in diameter. Sometimes, in their flight, they came as low as ten feet from the ground, then rose, flying north to south. He followed them about a hundred yards, then a building interrupted him. The group of drones formed a sort of cone with the queen at the summit, then the cone enlarged into a globe of which she was the centre : at this moment the queen succeeded in getting away and rose vertically, still followed by the drones who had reformed the cone under her."¹

"Some years later the Rev. Millette, at Witemarsh, observed the final phase of the act. During a hiving, he noticed a flying queen, who an instant later was stopped by a male. After having flown about a rod they fell to the ground hooked to each other. He approached and captured them both, at the very moment when the male had abandoned himself to the embrace ; he carried them to the house and let them loose in a closed room. The angry queen flew toward the window ; the male after dragging himself for an instant across the open palm of the observer's hand, fell to the floor and died. Both male and female had at the tip of the abdomen drops of a milky white liquid ; by squeezing the male, he saw that the male had lost his genital organs."²

"Having seen the queen go out, M. Carrey closed the entrance

¹ *Bienenzeitung* (Bee Gazette) Jan., 1850.

² *Farmer and Gardener*, 1859.

Love Among Social Animals

of the hive. During his absence, which lasted a quarter of an hour, three false-drones came to the entrance and, finding it closed, continued flying. When the queen on her return was only about three feet from the hive, one of the drones flew very rapidly toward her, throwing his legs around her body. They stopped, resting on a long grass-blade. Then an explosion was distinctly heard, and they separated. The drone fell to the ground quite dead, with abdomen much contracted. After a few circles in the air, the mother entered the hive."¹

Save the remark about the final explosion, these three accounts accord well enough, and give an exact idea of one of the couplings most difficult to get sight of.

It is, moreover, the one half-obscure point in bee life. One knows all the rest, their three sexes, rigorously specialized, the precise industry of the wax-workers, the diligence of the collectors, the political sense of these extraordinary amazons, their initiative when the hive is too full, their start for the formation of new swarms, the duels of queens where the populace intervene, the massacre of males as soon as they are useless, the nurse's art in transforming a vulgar larva into the larva of a queen, the methodical activity of these republics where all wills, united in a single conscience, have no other aim than the common well-being and the conservation of the race. It is, however, these over-mechanical virtues which constitute the inferiority of the bee; the workers are extremely laborious and well-behaved, but they lack even that slight personality which characterizes sexed insects. The much less reasonable queen is more living, she is capable of jealousy, rage, despair when she feels her royalty menaced by the new queen whom the nurses have bred up in secret. Even the useless, noisy, pillaging, parasitic males, drunk and swollen with vain sperm, are more

¹ Copulation of the Mother bee, in *l'Apiculteur*, 1862.

The Natural Philosophy of Love

attractive than the honest workers, and handsomer also, stronger, more slender, more elegant. Bee-lovers generally despise these musketeers, yet it is they who incarnate the animality, that is to say the beauty of the species. If it is true, as M. Maeterlinck believes (*La Vie des Abeilles*), that the most vigorous of seven or eight hundred males finally seduces the royal virgin, then their laziness, their greediness, their giddy staggering are but so many virtues.

It seems that the queen and even the workers can without fecundation lay eggs which will hatch into males ; but copulation is necessary in order to produce females and queens ; now as only the queen can receive the male, a hive without a queen is doomed. That is the practical point of view ; the sexual point of view leads to other reflections. A female can, quite alone, give birth to a male : but to have an egg hatch into a female it must be fecundated by a male born spontaneously : one observes here the real exteriorization of the male organ, a segmentation of the genital power into two forces, the male force and the female. Thus disunited, it acquires a new faculty which will fully unfold itself by the reintegration of the two halves of the initial force into a single force. But why do the virgin-born ovules necessarily give birth to males, among bees, and to females among plant-lice ? That is a question defying answer. All that one sees is that parthenogenesis is always transitory, and that, after a number of virginal generations, normal fecundation always intervenes.

One cannot say that the mother bee is a true queen, a veritable chief, but she is the important personage in the hive, the one without whom life stops. The workers have the air of being mistresses ; in reality their nervous centre is in the queen ; they act only for her, and by her. Her disappearance sets the hive crazy, and drives it to absurd endeavours, such as the trans-

Love Among Social Animals

formation of a nurse into a layer, though she will give eggs of one sex only, so many useless mouths. In reflecting on this last expedient one can measure the importance of sex, and understand the absolutism of its royalty. Sex is king, and there is no royalty save the sexual. The making neuter of the workers, which sets them out of norm, if it is a cause or order in the hive, is above all a cause of death. There are no living creatures save those who can perpetuate life.

The interest offered by bees is very great, but does not pass that offered by the observation of most hymenoptera, social or solitary, or of certain neuroptera, such as termites ; or even by beavers, and many birds. But bees have been through many ages our sweet-producers, and they alone ; hence man's tenderness for insects more valuable than all others to him. Their intelligence is well developed, but soon shows its limitations. People pretend that bees know their master, a manifest error. The relations of bees and man are purely human. It is evident that they are as ignorant of man as are all the other insects, and all other invertebrata. They allow themselves to be exploited, in the sense of their instinct, to the limit of famine and muscular exhaustion. Virgil's phrase is excessively true, in all the senses one wishes to take : *Sic vos non vobis mellificatis apes*. (Bees, you are making honey not for yourselves.) These clever, witty creatures are fooled by the gross fakes of our industrial cunning. When they have stacked their winter's provision of honey into their wax combs, man removes the honeycombs, and replaces them by sockets of varnished paper : and the solemn bees set themselves to forgetting their long labours ; before these virgin combs, they have but one idea : to fill them. They restart work with a bustle which would excite veritable pity in any man but a bee-keeper. These commercials have invented a hive with movable combs. The bees will never know. Bees are stupid.

The Natural Philosophy of Love

But we who see the limits of intelligence in bees, should consider the limits of our own. There are limits ; it is possible to conceive brains who observing us, would say : men are stupid. All intelligence is limited ; it is just this shock against the limit, against the wall, which by the pain it causes, engenders consciousness. We should not laugh too much at the bees who gaily furnish the mobile combs of their improved hives. We are perhaps the slaves of a master who exploits us, and who will remain forever unknown. The polygamy, or if one wish, the polyandry of bees, pretext for this digression, is then purely virtual ; it is in the state of possibility, but it will never be realized, since the fecundity of the queen is assured by a single act. The excessive multiplicity of males corresponds doubtless to an ancient order in which the females were more numerous. In any case only two or three males out of about a thousand, are used, or let us say ten, if you wish to suppose very frequent swarming ; this demonstrates that one must not prejudge the habits of an animal species by the over-abundance of one sex or another, and that in a general fashion, one must place natural logic above our human logic derived from mathematical logic. Facts in nature are connected by a thousand knots of which no single one is solvable by human logic. When one of these tangles is unravelled before our eyes we marvel at the simplicity of its mechanism, we think we understand, we make generalities, we prepare to open neighbouring mysteries with the same key : illusion ! One always has to begin again at the start. Thus the sciences of observation become increasingly obscure as one penetrates further into the labyrinth.

Among wasps and hornets there is nothing resembling polygamy, even potentially. A fecundated female after passing the winter, constructs by herself the first foundations of a nest, lays the eggs, from which sexless individuals are born ; these

Love Among Social Animals

workers then assume all material labours, finish the nest, watch the larvæ which the female continues to produce. These are now males and females : after coupling the males die, then the workers, the females become languid, those who survive will found as many new tribes.

The generation of bumble-bees is more curious, the differentiation of castes more complicated. There are among them, males, workers, small females, great females. A great female, having passed the winter, founds a nest in the earth, often in moss (there is a sort called the moss bee), she constructs a wax comb, and lays. From the first eggs come workers who, as in wasps, construct the definitive nest, pillage, make honey, and being more industrious than the other sort of bees who fear dampness, they scour the country long after sunset. After the workers, the little females see light ; they have no function save laying, without fecundation, the eggs which will hatch male. Simultaneously the queen produces great females who will soon couple with the males. Then, as with wasps, all the colony dies except the fecundated great females, by whom the cycle will recommence, the following spring.

There are three castes of ants, or four if one count the division of neuters into workers and fighters, as among termites. Here, as with bees, the neuters are the base of the republic, the males die after mating, the females after laying. "There are," says M. Janet (*Recherches sur l'anatomie de la fourmi*) "workers so different from the others, in the development of their mandibles and the largeness of their heads that one calls them soldiers, a name according with the rôle they fill in the colony." These soldiers are also butchers, who cut up prey which is too large or dangerous. Specialization is the only superiority of the neuters who for the rest seem inferior to the females and to the males in size, muscles and visual organs. The females are

The Natural Philosophy of Love

sometimes half as large again as the neuters, the males being between the two sizes. The ant shows much more intelligence than the bee. Before this tiny people one seems really to touch humanity. Consider that the ants have slaves, and domestic animals. First the plant-lice, preferably those who live on roots, and, at need, those of the rose-bush, who are milked, and who permit it, subjected by long heredity; *Aphis formicarum vacca*, says Linnæus briefly (beetle, the ants' cow). But wandering herds are not enough for them, they keep in the interior of their ant-hills, colonies of slave plant-lice, of domesticated staphylinidæ. The staphylinidæ are small coleoptera with mobile abdomen, one of their species is only found among ants. They are domesticated to the point of being no longer able to feed themselves: the ants stuff the necessary food into their mouths. In return the staphylinidæ furnish their masters a revenue analogous to that which they get from the plant-lice: from the bunch of hairs rising at the base of their abdomen they seem to exude a delectable liquor, at least one sees the ants suck these hairs with great eagerness. These animals permit it; they are so much at home, that the same observer (Muller, trs. by Brullé, in the *Dictionnaire d'histoire naturelle de Guérin, sub voce* Pselaphieus) has seen them coupling without fear in the midst of the busy ant people, the male hunched on the back of the female, solidly crammed against the mellifluous tuft of ant's delicacies.

One knows that the red ants make war on the black ants and steal their nymphs, who, retained in captivity, make them excellent domestics, attentive and obedient. White humanity also, at one point in its history, found itself faced with a like opportunity, but less prudent than the red ant, let it pass from sentimentalism, thus betraying its destiny, renouncing under Christian inspiration, the complete and logical development of its civilization. Is it not amusing that slavery is presented to

Love Among Social Animals

us as anti-natural, when it is, on the contrary, normal and excessively natural to the most intelligent of animals? And in an order of ideas more closely related to the subject of this book, if the making neuter of a part of the population, placing them in castes vowed to continence, is an anti-natural attempt, how is it that social hymenoptera, ants, bees, bumble-bees, and termites among neuroptera, have managed it so well, and have made it the basis of their social state? Doubtless there is nothing like it among animals; but mammals, apart from that monster, man, even including beavers, are infinitely inferior to insects. If the habits of social birds (for there are such) were better known, one might find analogous practices among them. The sexual co-operation of all the members of a people being useless so far as the conservation of the race is concerned, and, on the other hand, inferior species living as neighbours to a superior species being destined to disappear, slavery is good for the inferiors, as it assures them perpetuity and a sort of evolution suited to their feebleness.

A little brown ant, the anergates, having no workers establishes itself as parasite in an ant-hill and gets itself served by workers of another species in order to live. What ingenuity of the sexed, what docility of the sexless! The worker ants are clearly degenerate females, among whom sexual sensibility has been completely transformed into maternal sensibility. One observes, moreover, in many species an intermediate type of woman-worker, who gives the key to this evolution. One should note that after fecundation the females do not all re-enter the city; where they fall, they build, as mother-bumble-bees, a provisory nest, acting then like workers, and await the first egg-laying, which will produce exclusively real workers and will thereby permit the normal construction of the new ant-hill.

There are among ants, as among butterflies, hermaphrodites

The Natural Philosophy of Love

along the medial line, or sometimes along an oblique line : this gives absurd creatures, half one thing, half the other, or singularities such as a female with a worker's head who functions as a worker.¹

Polygamy by massacre of males, as among herbivora, and gallinaceæ seems a step toward a more logical and more economic distribution of the sexes. If antelopes perpetuate themselves very well with one male to an hundred females, is it not an indication that a part at least of the sacrificed males might have dispensed with being born? And would it not be better, in the interest of the antelopes, that a part of these males, if they ought to continue to be born, should be normally sexless, as with termites, and entrusted with some social duty?

The organization of termites is very pretty; it will serve to finish off this brief review of animal societies founded on the unsexing of sexes. One has already noted, in the chapters on dimorphism, the diversity of sexual forms corresponding to four quite distinct castes. The minute examination of one of their republics permits one to assert differentiations much more numerous, for each of the principal castes passes through active larval and nymphal forms, adolescent forms, such as most neuroptera and libellules also present. In taking count of all the nuances one may observe in a state (to use the familiar word) of termites fifteen different forms, all with marked characteristics. The principal are: 1. Workers, 2. Soldiers, 3. Small males, 4. Small females, 5. Large males, 6. Large females, 7. Nymphs with little cases, 8. Nymphs with long cases, 9. Larvæ. When one attacks an ant-hill, the soldiers arrive at the breach, very threatening, odd, with their bodies all head, all mandibles. The enemy routed, the workers come to repair

¹ E. Rambert, after A. Forel, *Les Mœurs des fourmis* (Bibliothèque universelle, Vol. LV).

Love Among Social Animals

the damage. There are sometimes several female egg-layers ; sometimes there is only one male : copulation always takes place outside the hill, and as with ants, the males perish, while the fecundated females become the origin of a new state. The expeditions of travelling termites, common as fighting termites in South Africa, are naturally directed by soldiers. Sparmann (cited in Guérin's *Dictionnaire d'histoire naturelle*) observed them during his voyage to the Cape, and says they behave rather as sergeants in close rank, or climbing on to grass blades, watch the defile, beating with their feet, if the order were bad, or too slow. The signal is always understood, and obeyed by the rank at once is answered by a whistle. There is in this something so marvellous that one hesitates to accept the traveller's interpretation in entirety. It is not the spontaneous and mechanical discipline of the ants, but the consenting obedience so difficult to obtain from inferior humanities. After all, nothing is impossible, and without being credulous in these matters, one need be astonished at nothing. Neuroptera are, moreover, exceeding old on the earth ; they date from before the coal-beds : their civilization is some thousands of centuries older than human civilizations.

Beavers are the only mammals, man excepted, whose industry indicates an intelligence near that of insects. But their societies offer no complication, they are a simple grouping of couples. They do not construct their dams until the females have been delivered, which happens towards the end of July ; one sees no other connection between their sexual habits and their remarkable works.

These enormous trees felled and made to lie where intended, these piles stuck in the river-bed and interbound with twisted branches, these impermeable dams, all this hard and complicated work the beaver undertakes when pushed by necessity.

The Natural Philosophy of Love

He needs an artificial lake with unvarying depth ; if he finds one made by nature, he accepts it, and limits himself to erecting his regular huts. Thus osmies, chalicodomes, or xylocopes,—or men, if they find by chance a nest prepared, hasten to profit by it. The instinct of construction is by no means blind ; it is a faculty which will not be employed very often save in extremity : the present inhabitants of the Loire valley still arrange the caves for domestic use. To its injury, but of that it knows nothing, the bee profits by the artificial combs slid into its hive. The Rhone beaver has rested ever since men erected such excellent dams there. The fairy palace which rises in mid-forest for the rubbing of a ring is the human and animal ideal.

I must close these observations on natural societies, by pointing out that if they are to-day based on something quite different from polygamy, it seems likely that they were in origin societies either of polygamy or of sexual communism. If one starts from communism one will very soon either evolve toward the couple, or toward polygamy, if it is a matter of mammals ; or toward sexual neutralization if it is a matter of insects. The couple, polygamy, neutralization are all methods ; sexual communism is not a method, and for that reason one must consider it as the chaos from which order has little by little emerged.

Chapter 18

The Question of Aberrations

Two sorts of sexual aberration—Sexual aberrations of animals—Those of men—Crossing of species—Chastity—Modesty—Varieties and localizations of sexual bashfulness—Artificial creation of modesty—Sort of modesty natural to all females—Cruelty—Picture of carnage—The cricket eaten alive—Habits of carabs—Every living creature is a prey—Necessity to kill or to be killed.

SEXUAL aberrations are of two sorts. The cause of the error is internal or external. The flower of the *arum muscivorum* (fly-catching arum) by its cadaverous odour attracts flies in search of rotting flesh in which to lay their eggs. Schopenhauer has supported by this or analogous fact a theory just, but somewhat summary, of aberration from external cause. Aberration from internal cause is sometimes explained by the statement that the same arteries irrigate and the same nerves animate the region of the sacrum, anterior and posterior; the excretal canals being always near each other, and sometimes common, at least for part of their length. One has spoken seriously of the drake's sodomy, but anatomy refuses to understand it. Whether a drake frequents another drake or a duck, he addresses himself in both cases to the single door of a vestibule into which all excretions are poured. Doubtless the drake is aberrated and his accomplice still more so, but nature deserves part of the blame. In general, animal aberrations require very simple explanations. There is a keen desire and very urgent need, which if unsatisfied produces an inquietude, which may

The Natural Philosophy of Love

increase until a sort of momentary madness takes hold of the animal, and throws it blindly upon all sorts of illusions. This may go, doubtless, to the point of hallucination. There is also a need, purely muscular, of at least sketching—in the sexual act, either passive or active ; one sees, by singular inversion, cows in heat mounting each other, perhaps with the idea of exciting the male, or perhaps the visual representation which they make themselves of the desired act, forces them to try an imitation : it is a marvellous example because it is absurd, of the motor force of images.

There are two parts in the sexual act ; that of the species, and that of the individual ; but that of the species is only given it by means of the individual. In relation to the male in rut, it is a question of a very simple natural need. He must empty his spermatic canals : lacking females they say the stag rubs his prong on trees to provoke ejaculation. Bitches in heat rub their vulva on the ground. Such are the rudiments of onanism, suddenly carried by primates to such a high degree of perfection. One has seen male cantharides, themselves ridden, riding other males ; the argule, a small crustacean parasite of fresh-water fish, is so ardent that he often addresses himself to other males, or to gravid or even dead females. From the microscopic beasts to man, aberration is everywhere ; but one should, rather, call it, at least among animals, impatience. Animals are by no means mere machines, they as well as men are capable of imaginations, they dream, they have illusions, they are subject to desires whose source is in the interior movement of their organism. The sight or odour of a female over-excites the male ; but far from any female, the logic of the vital movement suffices perfectly to put them in a state of rut ; it is absolutely the same with females. If the state of rut, and if the sensibilization of the genital parts is established far from

140

The Question of Aberrations

necessary sex, we have here a natural cause of aberration, for it is this special sensibility which must be used : the first simulacrum, or even the first propitious obstacle will be the adversary against which the exasperated animal exercises the energy by which he is tormented.

One may apply the general principles of this psychology to man, but on condition that we do not forget that man's genital sensibility is apt to be awakened at any moment, and that for him the causes of aberration are multiplied *ad infinitum*. There would be extremely few aberrant men and women if moral customs permitted a quite simple satisfaction of sexual needs, if it were possible for the two sexes to meet always at the opportune moment. There would remain aberrations of anatomical order ; they would be less frequent and less tyrannic, if our customs, instead of contriving ways to make sexual relations very difficult, should favour them. But this easiness is only possible in promiscuity, which is possibly a worse ill than aberration. Thus all questions are insoluble, and one can only improve nature by disorganizing her. Human order is often a disorder worse than spontaneous disorder, because it is a forced and premature finality, an inopportune turning of the vital river out of its course.

Sexual selection is probably not a source of variation (i.e. of type) ; its rôle is, on the contrary, to keep the species *in statu quo*. The causes of variation are probably changes of climate, the nature of the soil, the general milieu, and also disease, the troubles of blood and nerve circulation—perhaps certain sexual aberrations. I say perhaps, for the cross-breeding between individuals of different species living in liberty, seems difficult as soon as the species is really something different from a variety in evolution, a form still seeking itself. At that stage anything is possible ; but one is speaking of species (i.e. set species).

The Natural Philosophy of Love

Mules are artificial products ; one has never found them in free nature. It is very difficult to obtain the copulation of a hare and doe-rabbit ; the doe is refractory and the hare lacking enthusiasm. The mare very often refuses the ass ; if she turns her head at the moment of his mounting, one has to bandage her eyes to overcome her disgust ; it is the same with the she-ass whom one offers a stallion for producing the mule. As for the product of bull and mare, the celebrated jumart is a chimera : comparison of the meagre prong of the bull to the massive one of the stallion is enough to convince one that such dissimilar instruments cannot replace each other. Nevertheless, it would be imprudent wholly to rule out this form of sexual aberration from the causes of variability of species. That is perhaps one of its justifications.

Of all sexual aberrations perhaps the most curious is chastity. Not that it is anti-natural, nothing is anti-natural, but because of the pretexts it obeys. Bees, ants, termites, all present examples of perfect chastity, but of chastity that is utilized, social chastity. Involuntary, congenital, the neuter state among insects is a state *de facto*, equivalent to the sexual state, and the origin of a characterized activity. In humans it is a state, often only apparent or transitory, obtained voluntarily or demanded by necessity, a precarious condition so difficult to maintain that people have heaped up about it all sorts of moral and religious walls, and even real walls made of stones and mortar. Permanent and voluntary chastity is nearly always a religious practice. In all ages men have been persuaded that perfection of being was only obtainable by such renunciation. This seems absurd ; it is, on the contrary, very direct logic. The only means of not being an animal is to abstain from the act to which all animals without exception deliver themselves. It is the same motive that has made people imagine abstinence, fasting ; but as one

The Question of Aberrations

cannot live without eating, and as one can live without making love, this second method of perfectionment has remained in the state of outline.

It is true, asceticism, of which humanity alone is capable, is one of the means which may lift us above animality ; but by itself it is insufficient to do this ; by itself it is good for nothing, save perhaps to excite sterile pride ; one must add to it an active exercise of the intelligence. It remains to discover whether asceticism, which deprives the sensibility of one of its healthiest and most stimulating nutriments, is favourable to the exercise of the intelligence. As it is not the least necessary to answer this question here, we will say nothing save this, provisorily : one need not scorn chastity nor disdain asceticism.

Is modesty an aberration ? Indulgent observers have believed that they noticed it in elephants as well as in rabbits. The modesty of the elephant is a popular maxim which makes right-minded women cast sheep's eyes, in circuses, at the great beast who hides for her amours. During copulation, says a celebrated rabbit-raiser¹ " the male and female should be alone, in demi-obscurity. This solitude and obscurity are more necessary in view of the fact that certain females show signs of modesty." The modesty of animals is a fancy. Like modesty among humans, it is merely the mask of fear, the crystallization of timorous habits, necessitated by the animals being unarmed during coupling. This is very well known and needs no explanation. But the need of reproduction is so tyrannic that even among the most timid animals it does not always leave them presence of mind enough to hide themselves during the amour. The most domesticated of animals, one knows it only too well, shows at this moment neither fear nor shame.

¹ Mariot-Didieux, *Guide pratique de l'éducateur de lapins*. Bibliothèque des professions industrielles et agricoles, series H. No. 17.

The Natural Philosophy of Love

In man, among the civilized and among the uncivilized, sexual fear, shame, has taken a thousand forms which, for the most part, seem to have no longer any relation to the original feeling whence they are derived. One notices, however, that if the milieu where the couple finds itself is such that no attack, no ridicule is to be feared, shame vanishes in part, or entirely according to the degree of security and the degree of excitement. For a crowd of populace on a fête night there is hardly any modesty save "legal modesty"; the example of one bolder couple is enough, if there is no authority to be feared, to set loose all the appetites, and one then sees clearly that man who does not hide in order to eat, only hides to make love under pressure of usage.

From the genital act, modesty is stretched over the exterior sexual organs by a mechanism very simple and very logical. But here, I think, one must distinguish between genital modesty bred from the custom of clothing the whole body, and that which has led men to cover only a particular part. Heat, cold, rain, insects explain clothing, but not the savage's cotton drawers or the fig leaf; especially when the leaf imposed on married women, for example, is forbidden to virgins, or when this symbolic leaf is so reduced that it serves no purpose save that of a sign. In this last case, it has not even any direct relation to genital modesty; it is only a matrimonial ornament, analogous to the ring or the collar, a sign, indeed, indicating a condition. It is possible also, that among certain peoples where the men go entirely naked, the women wear an apron merely to keep off flies, rather as a peasant drapes his horse's muzzle with grass and leaves. Quite often, however, one is forced to recognize in these customs, the proof of a particular genital sensibility, analogous to civilized modesty. An English sailor, at the time of the first explorations, got himself rejected by the Maori women not because he appeared without clothing, a state which custom

The Question of Aberrations

required, but because he appeared with his organ unsheathed. This detail shocked them extremely. A curious example of the localization of shame : all parts of the body could and should show themselves, all save this small surface. On reflection, the modesty of Europeans at a ball or on the beach is almost as absurd as that of the Maoris, or as that of the fellaheen women who, at the approach of a stranger, remove their sole garment, in order to cover their faces.

Sexual modesty, as one observes it to-day among the most various peoples, is utterly artificial. Livingstone assures us that he developed modesty in little Kaffir girls by clothing them. Surprised in *négligé*, they covered their breasts—and this in a race where the women go wholly naked, save for a string round the middle, from which another string hangs. Clothing is only one of the causes of modesty, or of customs which give us the illusion of it, and the sentiment of fear associated with the sexual act does not explain all the rest. There is a shame particular to the female, an ensemble of movements, which one can assimilate to nothing, which one can attach to nothing. The gesture of Venus is not purely a woman's gesture ; nearly all females, especially mammals, have it ; the female who refuses, lowers her tail and clamps it between her legs ; there is here, evidently, the origin of one of the particular forms of modesty. We have given characteristic examples in an earlier chapter.

Man is a problem ; the slightest of his habitual sentiments has multiple and contradictory roots in a sensibility variable and always excessive. He is the least poised and the least reasonable of all animals, although the only one who has been able to construct for himself an idea of reason ; he is an animal lunatic, that is to say one who flows out on all sides, who unravels everything in theory, and tangles up everything in fact, who desires and wills so many things, who throws his muscles into so many

The Natural Philosophy of Love

divers activities that his acts are at once the most sensible and the most absurd, the most conforming and the most opposed to the logical development of life. But he profits even by error, especially by the error fatal to all animals, and that constitutes his originality, as Pascal noted, and as Nietzsche repeats.

If the word modesty is not exact, when applied to animals, although one finds in their habits the distant origin of this complex and refined sentiment, neither is the word cruelty, when applied to their natural acts of defence or nutrition. Human cruelty is often an aberration ; the cruelty of beasts is a necessity, a normal fact, often the very condition of their existence. An anarchist philosopher, ardent and naïve disciple of Jean-Jacques, believed that he traced a universal altruism in nature ; he has re-done with other words, another spirit, and a few new examples, the infantile works of Bernardin de Saint-Pierre, and has abused, under pretext of inclining mankind to kindness, the right which one has to promenade about nature without seeing and without understanding her. Nature is neither good, nor evil, nor altruist, nor egoist ; she is an ensemble of forces whereof none cedes save under superior pressure. Her conscience is that of a balance ; being of a perfect indifference, it is of an absolute equity. But the sensibility of a balance is of a single order, single dimension ; the sensibility of nature is infinite, to all actions and reactions. Whether the strong devour the weak, or the weak the strong, there is no compensation save in our human illusion ; in reality one life is enlarged at the expense of another life, in one case as in the other, the total energy has been neither diminished nor augmented. There is neither strong, nor weak, there is a level which tends to remain constant. Our sentimentalism makes us see dramas where nothing occurs more disturbing than the general facts of nutrition. One may, however, look at these facts a little more

The Question of Aberrations

closely, and then the parity of animal organism and the human organism will lead us to qualify as cruel, certain acts which would deserve this title if committed by man. One must say cruelty in order to understand it oneself ; it is also necessary to remember that this cruelty is unconscious, that it is not felt by the devouring animal, that no element of ill-will enters into its act, and that man himself, the judge, in no way deprives himself of eating live creatures when they are better raw than cooked, living than dead.

The philanthe, a sort of wasp, catches a bee to feed its larvæ ; while carrying the prey to his nest, he presses the belly, sucks the bee, empties it of all its honey. But at the entrance of the nest a mantis is waiting, its double-saw of an arm is unfolded, the philanthe is nipped in passing. And one sees the mantis gnawing the belly of the philanthe while the philanthe continues sucking the belly of the bee. And the mantis is so voracious that you can cut her in two without making her let go ; a chain, truly, of carnage.

The larvæ of the sphex, another wasp, are fed on live crickets that have been paralyzed by a stab. As soon as it hatches, the larva attacks the cricket in the belly at the chosen spot where the egg has been laid. The poor insect protests by feeble movements of antennæ, and mandibles : in vain, he is eaten alive, fibre by fibre, by a great worm which gnaws his entrails, and with so great a skill that it begins on the parts not essential to life, and thus keeps the prey fresh and tasty to the last. Such is the gentleness of nature, the good mother.

The carabs are fine coleoptera, violet, purple, and golden. They feed only on living prey, which they chew slowly, beginning at the belly, and boring slowly into the palpitating cavity. Helices, and slugs are thus torn apart by bands of carabs who dig them up and dissect them in a boiling of saliva.

The Natural Philosophy of Love

Such are theft and murder, in nature. These are the normal acts. Herbivorous species alone are innocent, perhaps from imbecility ; always occupied in eating, because their food is so unsubstantial, they have not time to develop their powers : they are the inevitable prey, a sort of superior grass which will be browsed at the first opportunity. But the carnivora are in the same way eaten by their stronger and more adroit fellow-boarders. Very few beasts have a quiet death. The geotrupes, scarabs, necrophores, their work finished and the egg-laying accomplished, devour each other to pass the time, perhaps to lend a little gaiety to their last moments. Animals are of but two sorts, hunters and game, but there is scarcely a hunter who is not game in his turn. One does not find in nature the purely human invention of breeding for slaughter, or the more extraordinary one of breeding for hunting. Ants know how to milk their cows, the plant-lice, or their goats the staphylinid ; they do not know how to fatten them and to slit their gullets.

A hundred other signs of animal cruelty are scattered through this book. One may collect many others, and this form a work edifying in this era of sentimentalism. Not because one wishes—quite the contrary—to offer them to men as so many examples ; but because this might teach them that the first duty of a living being is to live, and that all life is nothing but a sum sufficient of murders. Men or tigers, sphex or carabs are under the same necessity ; to kill or to die, or to shed blood or eat grass. But to eat grass, is not much better than suicide : ask the lambkins.

Chapter 19

Instinct

Can one oppose instinct to intelligence?—Instinct in man—Primordially of intelligence—Instinct's conservative rôle—Modifying rôle of intelligence—Intelligence and consciousness—Parity of animal and human instinct—Mechanical character of the instinctive act—Instinct modified by intelligence—Habit of work creates useless work—Objections to the identification of instinct and intelligence taken from life of insects.

THE question of instinct is perhaps the most nerve-racking there is. Simple minds think they have solved it when they have set against this word the other word : intelligence. That is merely the elementary position of the problem. Not only does it explain nothing, but it opposes all explanations. If instinct and intelligence are not phenomena of the same order, reducible one to the other, the problem is insoluble and we will never know what instinct is, nor what is intelligence.

In the vulgar contrast one overhears the considerable *naïveté* that animals have instinct and man has intelligence. This error, pure rhetoric, has prevented, up to the present, not the answer to the question which still seems a long way off, but the scientific exposure of the question itself. It includes but two formulæ : either instinct is a fructification of intelligence ; or intelligence is an augmentation of instinct. One must choose, and know that in choosing one makes, as the case may be, either instinct or intelligence, the seed or flower of a single plant : the sensibility.

The Natural Philosophy of Love

It must first be established that for manifestations of instinct and for those of intelligence, there is no essential difference between men and animals. The life of all men, quite as well as that of all animals, is based on instinct, and doubtless there is no animal who cannot give signs of spontaneity, that is to say, of intelligence. Instinct seems anterior because in all animals except man the quantity and especially the quality of instinctive facts greatly surpasses the value and number of intellectual facts. This is so, but in admitting this hierarchy, if one thereby explain with considerable difficulty the formation of *intelligence* in man and in the animals which show more or less perceptible gleams of it, one also renounces by so doing, all later attempts that might furnish some notions as to the formation of *instinct*. If the bee makes his combs mechanically, if this act is as necessary as the evaporation of warmed water, or the crystallization of freezing water, it is useless to search any further : one is in the presence of a fact which will never yield anything else.

If, on the contrary, one consider intelligence as anterior, the field of investigation stretches out to infinity and instead of one problem radically insoluble, one has a hundred thousand or more, as many as there are animal species, and of these problems none is simple, none absurd. This manner of looking at it, brings, I admit, grave consequences. One must then look at matter as a simple allotropic form of intelligence, or, if you prefer, consider intelligence and matter as equivalents, and admit that intelligence is merely matter endowed with sensibility, and that its power of extremely diversifying itself finds impassable limits in the very forms which clothe it. Instinct is the proof of these limits. When acts have become instinctive, they have become invincible. A species is a group of instincts whose tyranny becomes, one day, deaf to all attempts at movement. Evolution is limited by the resistance of what is, striving

150

Instinct

against what might be. There comes a moment when a species is a mass too heavy to be moved by intelligence : then it remains in its place ; this is death, but is compensated by the steady arrival of other species ; new forms assumed by the inexhaustible Proteus.

We can add nothing, here, to this theory, save a few facts favourable to it, and a handful of objections.

The old distinction between intelligence and instinct, although false and superficial, may be adapted to the views just abbreviated. We will attribute to instinct the series of acts which tend to conserve the present condition of a species ; and to intelligence, those which tend to modify that condition. Instinct will be slavery, subjection to custom ; intelligence will represent liberty, that is to say, choice, acts which while being necessary, since they occur, have yet been determined by an ensemble of causes anterior to those which govern instinct. Intelligence will be the deep, the reserve, the spring which after long digging emerges between the rocks. In everything that intelligence suggests, the consciousness of the species makes a departure ; what is useful is incorporated in instinct, enlarging and diversifying it ; what is useless perishes—or perhaps flowers in extravagances, as it does in man, in dancing and gardening birds, in the magpies attracted by a jewel, larks by a mirror ! One will then call instinct the series of useful aptitudes ; intelligence, the series of aptitudes *de luxe* : but what is useful, what useless ? Who will dare brand a series of bird notes or a feminine smile as lacking utility ? There is neither utility nor inutility unless there be also finality. But finality cannot be considered as an aim ; it is nothing but a fact, and one which might be other.

This utilization of old terms, if it were possible, could never be the pretext for a new radical differentiation between instinct

The Natural Philosophy of Love

and intelligence ; one could only use it to define by contrast two states whose manifestations present appreciable nuances. The great objection to the essential identification of instinct and intelligence comes from a habit of mind which spiritistic philosophy has for long imposed upon us : instinct should be unconscious ; intelligence, conscious. But psychological analysis does not permit us rigorously to tie intellectual activity to consciousness. Without consciousness, everything might happen, even in the most thoughtful man, exactly as it does under the paternal eye of this consciousness. In M. Ribot's interesting analogical comparison, consciousness is an internal candle lighting a clock-face ; it has the same influence on the movement of the intelligence that this candle has on the clock. It is difficult to know whether animals have consciousness, and it is perhaps useless, unless, at least, one admit that this candle, by its luminous or calorific rays, does, as M. Fouillée teaches, affect the march of the mechanism. In sum, consciousness also is a fact, and no fact dies without consequences ; there are neither first causes nor last causes. In any case one will, since it is evident, cling to one statement that even if consciousness is a possible reactive, intelligence can act without it : the most conscious of men have phases of unconscious intellectuality ; long series of reasonable acts may be committed without their reflection being visible in the mirror, without the candle being lit before the clock. In brief, it does not seem as if nervous matter could exist without intelligence or sensibility ; but consciousness is an extra. There is no need to take count of the old scholastic objection to the identification of the intelligence and the instinct.

What is there serious in the other objection : that man, if he once had instincts, has lost them ?

The animal having the richest instincts ought also to have, or to have had, the richest intelligence. And reciprocally :

Instinct

intellectual activity supposes a greatly varied instinctive activity, either in the present or in the future. If man have not instincts, he ought to be in the way of making them. He has numerous instincts, and makes more every day : a part of his consciousness is constantly crystallizing itself into instinctive acts.

But if one consider the different instincts of animal species one will scarcely find any which are not also human. The great human activities are instinctive. Doubtless man may refrain from building a palace, but he cannot dispense with a cabin, a nest in a cave, or in the fork of a tree, like the great apes, many mammals, birds, and most insects. His food depends very little on choice, it must contain certain indispensable elements : a necessity identical with that which rules the animals, and even the plants whose roots delve down toward the desired juice, and whose branches reach toward the light. Song, dance, strife, and, for the group, war ; human instincts are not unknown to all animals. The taste for brilliant things, another human instinct, is frequent enough in birds ; it is true that birds have not yet made anything of it, and that man has evolved the sumptuary arts. There remains love, but I think this supreme instinct is the consecrated limit of the objections.

Useful acts habitually repeated may become invincible, like veritable instinctive movements. A hunter¹ spending the winter in an isolated cabin in Canada engages an Indian woman to keep house for him. She arrives in the evening, melts the snow, begins to wash up, shifts everything, prevents his getting any sleep. He rages. Silence. As soon as he is asleep, the woman mechanically begins to work again, and so on, until the humble Indian gets the last word. Here, exactly as among insects, one has the example of work which once begun must go on until it is finished. The insect cannot be interrupted ; if it is interrupted

¹ *Vide* Milton and Cheadle, work already cited.

The Natural Philosophy of Love

by external cause it starts work again, not at the point where it actually finds the work, but at the point where it, the insect, left off. Thus, an experimenter removes the nest which a chalicodome is building on a shingle; the bee returns, finds nothing, since there is nothing to find, but instead of recommencing the building, continues it. There is nothing to be done but close the hole; the bee closes it, that is to say she deposits the last mouthful of mortar on the ideal dome of an absent nest: then with instinct satisfied, sure of having assured her posterity, she retires, she goes to die. One can get the same result with the pelopœus, and with other builders. Processional caterpillars are accustomed to make long trips in Indian file on the branches of their native pine-tree, in search of food: if one place them on the rim of a basin they will stupidly circulate for thirty hours, without one of them having the idea of interrupting the circle by going off at a tangent. They will die in their track, stuck fast in obedience; when one falls another steps into his place, the ranks close, that is all. Here are the extremities of instinct, and to our great surprise they are almost the same in an Indian of the Great Lakes and in a processional pine caterpillar.

But other cases of animal's instinct joining with free intelligence, give examples of human sagacity. We have seen these same, mason-bees and xylocopes and domestic bees profit eagerly by a nest ready made, by a hole bored in wood, by artificial combs set ready to take their honey; the osmies, who lay in the stalks of cut reeds, in which they arrange a series of chambers, accommodated themselves under Fabre's guidance in glass tubes which permitted the great observer to know them intimately. Instinct is by turns as stupid as a machine and as intelligent as a brain; these two extremes should correspond with very ancient and very recent habits. It is certainly but a

Instinct

relatively short time since the peasant's pruning-bill began preparing cut reeds for the osmie ; before that time she constructed her nest, as she still does, in empty snail shells or in some natural cavity. They are very interesting these osmies, extremely active solitary bees ; one sees them having exhausted their ovaries, but not their muscular force, building extra nests, provisioning them with honey, without having laid a single egg in them ; they will even make and close them without honey, if they do not find more flowers, thus showing a real craziness for work, an authentic mania analogous to that which moves man to move pebbles, to smoke, to drink rather than remain immobile.¹ If the osmie lived longer, she might perhaps invent some game which, vain at the start, would end by becoming both a need and a benefit to the whole species.

The theory which makes instinct a partial crystallization of intelligence is extremely seductive : I dare say we will have to accept it as true. Yet the contemplation of the insect world raises an enormous objection. In the course of his wonderful memoirs Fabre has formulated it ten times and with always fresh ingenuity. Here is the insect, nearly always born adult and after the death of her parents, she has received from them neither direct education nor education by example, as do the young of birds or mammals. A hen teaches her chick to scratch for worms (it is true that she does not teach her ducklings to dabble in puddles, and they are her despair, to our amusement), an osmie can teach its young nothing. Yet now osmies do exactly what their ancestors have done. The insect opens its shell, brushes its antennæ, performs its toilet, opens its wings, flies off for life, moves without hesitation toward the pasture it needs, recognizes and flees the enemies of its race, makes love,

¹ Compare this with the valuable remarks of a gamekeeper, "One must know the habits of animals, even their manias, for they have them, just as we do."—*Figaro*, 31 Aug., 1903.

The Natural Philosophy of Love

and finally constructs a nest identical with the cradle from which it has emerged.¹

One sees quite well that the acquisitions of the individual have passed to the descendant, but how? How have they fixed themselves in the nerves and blood during a few short days of life? Without any apprenticeship the sphex paralyzes with three stabs the cricket which is to feed its larvæ; if the cricket is killed and not paralyzed, the larvæ will die, poisoned by the carrion; and if the paralysis is not durable the cricket will come to, and destroy the sphex in the egg. The manœuvre of this wasp and of many other killing hymenoptera has this tiresome point for our reasoning, the act must be perfect, on pain of death. Nevertheless it must be admitted that the sphex has formed itself slowly, like all complex animals, and that its genius is only the sum of intellectual acquisitions slowly crystallized in the species.² As for the mechanism of this transformation of intelligence into instinct, it has for motive the principle of utility; intelligent acts which are useful for the preservation of the species, are the only ones which pass into instinct.

¹ To my mind a slight unsoundness creeps into Chapter 16, and here both Fabre and Gourmont seem to me to go astray in considering the insect as a separate creature, i.e. a creature cut off from its larva or cocoon life. Surely the animal may be supposed to exist while in its cocoon or larva, it may reasonably be supposed to pass that period in reflection, preparing for precisely the acts of its desire (as for example an intelligent young man might pass his years in a university under professors, awaiting reasonable maturity to act or express his objections). The larva has its months of quiet, precisely the necessary pre-reflection for the two days' joy-ride of exterior manifestation, amours, etc., its *contemplatio*, or what may be counted as analogous, passing in its cell; the perfection and precision of its acts, being, let us say, proportionate to the non-expressive period. Having spent so long a time in that possibly monotonous nest, it seems small wonder that the insect should know the pattern by heart. Small wonder, that is to say wonder not incommensurate with the general wonder of the whole process.—E.P.

² *Vide* translator's postscript.

Instinct

The science of these hymenoptera goes so far that it was ahead of human science until yesterday. The insect attacks the nervous system ; it knows that the power of beginning a movement lies in the nervous system and not in the limbs. If the nervous system is centralized as in weevils, their enemy the cerceris gives only one dagger-stab ; if the movement depends on three ganglia, it gives three stabs ; if on nine ganglia, nine : thus does the shaggy ammophile when it needs the caterpillar of the noctuelle, commonly called the grey worm, for its larvæ ; if a single sting in the cervical ganglion appears too dangerous, the hunter limits himself to chewing it gently, in order to induce the necessary degree of immobility. It is odd that the social hymenoptera who know how to do so many difficult things, are ignorant of this savant dagger-play. The bee stings at random, and so brutally that she mutilates herself while often inflicting but an insignificant wound on her adversary. Collective civilization has diminished the individual genius.

Chapter 20

Tyranny of the Nervous System

Accord and discord between organs and acts—Tarses and sacred scarab—The hand of man—Mediocre fitness of sexual organs for copulation—Origin of "luxuria"—The animal is a nervous system served by organs—The organ does not determine the aptitude—Man's hand inferior to his genius—Substitution of one sense for another—Union and rôle of the senses in love—Man and animal under the tyranny of the nervous system—Wear and tear of humanity compensated by acquisitions—Man's inheritors.

IT is a universal belief that nature or God, in their wisdom, have made the corporal organs in the best possible form: perfection of the eye, of the hand, of the paw-jaw of the mantis, of the sexual apparatus of man, of the bird or the scarab, the furnishing tarses of hymenoptera, the beaver's tail, the grasshopper's hams, the cicada's tambourine. It is sometimes true and very often false. It happens that there appears an exact concord between the organ and the act which it is to perform; but it happens also, and that not rarely, that the organs seem in no way fashioned for the deed they must accomplish: most of them are indeed chance tools, with which the creature manages, as he can, the acts which he wants to, or should do.

The forefeet of scarabs are so little destined for modelling and rolling mud-balls that their tarses are worn out in the process, as human fingers would perhaps be worn if they had to knead the raw clay and mortar. In considering the scarab one has to think of a humanity lacking fingers, having lost them by a long and slow diminution of nails, bones, flesh. The scarab is a

Tyranny of the Nervous System

modeller, nothing would be more useful to him than fingers ; instead of losing them by use, he ought to have grown them longer and more supple. He has lost them, and it is with the arm stumps that he turns the little balls which are to be food for himself or his offspring. This insect is condemned to a labour that will become increasingly difficult as the species grows increasingly old. It remains to discover whether the ancestors of the sacred scarab had tarses. Horus Apollo grants them as many fingers as the month has days, that is thirty, which corresponds quite well with the six feet and five tarses of the scarab. If he was a good observer, the question is answered, but a single testimony is insufficient, and, moreover, it is unlikely that so great a wearing-away would have occurred in so small a number of centuries. Horus, and a savant like Latreille, have been the dupes of symmetry ; if either has looked closely at a scarab, and if he has seen the forefeet lacking tarses, he has put this down to chance or to accident. Fabre has at least noted one indisputable fact, it is that neither as nymph nor adult has the scarab tarses on its forefeet. If it ever had them, our reasoning draws new vigour from the negation, for then less than ever is it possible to find the least logical concordance between the insect's stumps and the need of modelling and turning to which nature condemns it.

This scarab is a type to which one can relate a great number of other examples : purveyor hymenoptera are wholly deprived of tools adapted to their work as quarrymen and well-diggers : thus, at the end of their labours the greater part of these fragile insects are very much damaged. One knows the beaver's constructions, but who without the certitude we have gained by observation, would have dared to attribute them to these great rats ?

Eighteenth-century philosophers set themselves the question :

The Natural Philosophy of Love

Is man man because he has hands ; or has he hands because he is man ? One may answer boldly, that man's hands, marvellous as they appear to us, add almost nothing to his intelligence. One does not see that they are indispensable for anything save for playing the piano. What constitutes man is his intelligence, his nervous system. The exterior organ is secondary : any kind of exterior organ, beak, prehensile tail, teeth, proboscis, paws would have done the work of the hands. There are birds' nests which no manual cleverness could weave.

The reproductive organs are no better adapted to their purpose than are the working organs. Doubtless they attain very often their end, but at the cost of efforts which a better disposition would have attenuated or eliminated altogether. The interior mechanism is, or seems, marvellous ; the external mechanism is rudimentary and gives no result, save, as they say, thanks to the ever-renewed ingenuity of the couples. Instinct, in one of its most necessary acts, is often put to difficult proof. The plausible adventure of Daphnis has been presumably often repeated, even though the limberness of the human form is well suited to coition ; but who has not been surprised to see a heavy bull leap clumsily upon a lowing cow, bending his useless hocks along her back, panting, and often not succeeding save thanks to the good offices of a farm hand ? Among beavers, says A. de Quatrefages (Orbigny's *Dictionnaire d'histoire naturelle*), the external orifice of the generative organs opens in a cloaca so placed under the tail that one hardly understands how the coupling takes place.

Certain matings are sheer *tours de force*, and the animal, whether it be the scutillary, a tiny insect, or the elephant, a colossus, is compelled to take positions absolutely different from its normal postures. Nature who firmly intends the perpetuity of the species, has not yet found a simple and unique

Tyranny of the Nervous System

means thereto ; or else, having found it, in budding, she has cast it aside to adopt the diversity of organs, means, and movements. There are none, even to those of our own species, which man may not criticize, even though he prize them ; he has criticized, and his criticism has been to diversify them still further, which simplifies a fated necessity in making it pleasanter. Morals term this diversification "luxury."¹ This term is a pejorative which may be applied also to the exercise of our other senses. All is but *luxuria*. *Luxuria*, the variety of foods, their cooking, their seasoning, the culture of special garden plants : *luxuria*, the exercises of the eye, decoration, the toilet, painting ; *luxuria*, music ; *luxuria*, the marvellous exercises of the hand, so marvellous that direct hand work can be mimicked by a machine but never equalled ; *luxuria*, flowers, perfumes ; *luxuria*, rapid voyages ; *luxuria*, the taste for landscape ; *luxuria*, all art, science, civilization ; *luxuria*, also the diversity of human gestures, for the animal in his virtuous sobriety has but one gesture for each sense, and that gesture unvarying ; or if the gesture, as probable, undergoes a change, it is but a slow, invisible change, and there is at the end but one gesture. The animal is ignorant of diversity, of the accumulation of aptitudes ; man alone is libidinous.

There is a principle which I will call the individualism of species. Each species is an individual which profits as best it may, for its useful ends, by the instruments which have devolved to it. A species of hymenoptera feels itself obliged to protect its eggs from new enemies, by digging holes in the ground ; it makes use of the tools which it has, without taking count of the fact that these tools have not been made for excavation ; it

¹ The Latin *luxuria* and French *luxure* have no exact English equivalent: our "luxury" is the French *luve* ; the phrase "the exercise of pleasant lusts" is perhaps as near as I can come to a definition of *luxure*.—Translator.

The Natural Philosophy of Love

acts thus at pressure of necessity, as man climbs trees in a flood, or gets upon the roof in case of fire. The need is independent of the organ ; it precedes it, and does not always create it. In the sexual act, need commands the gesture : the animal adapts itself to positions which are strange to it, and very difficult. Coupling is nearly always a grimace. One would say that nature has set the male organ here, and the female there, and left to specific ingenuity the care of effecting the junction.

It is, I think, permitted us to conclude from the mediocre fitness of animals to milieu, and of organs to acts, that it is not the milieu which absolutely fashions, or the organs which absolutely govern, the acts. One then feels oneself inclined to reaccept Bonald's definition of man, and even to find it admirable, just, and strict : An intelligence served by organs. Not "obeyed," not always, but served, service implying imperfection, a discord between the order and its fulfilment. But the phrase applies not to man only, and its spiritualistic origin in no way diminishes its aphoristic value ; it qualifies every animal. The animal is a nervous centre, served by the different tools in which its branches terminate. It commands and the tools, good or bad ones, obey. If they were incapable of performing their work, at least the essential parts of it, the animal would perish. There are forms of parasitism which seem to be the consequence of a general renunciation of organs ; impotent to enter into direct relations with the outer world, unmanned by the softness of the muscles, the nervous system brings the skiff it was piloting into some harbour or other, and beaches it.

Fabre says, thinking particularly of insects : " The organ does not determine the aptitude." And this most aptly confirms Bonald's manner of seeing. Thrown in at the end of a chapter, with scarcely anything directly to justify it, this

Tyranny of the Nervous System

affirmation but gains in value. It is the conclusion, not of a dissertation, but of a long sequence of scientific observations. As for the facts that one can set inside it, they are innumerable ; one would group them under two heads : the animal serves himself as best he can with the organs he possesses ; he does not always make use of them. The flying-stag, the best armed of all our insects, is inoffensive ; while the carab, of peaceful appearance, is a formidable beast of prey. Apropos of the pill in which the scarab shuts its egg, the skill with which it is worked up and felted, in a dark hole by a stump-armed insect, Fabre says simply : " It gave me the idea of an elephant wanting to make lace." But in what insect shall we see perfect accord of work and organ ? In the bee ? It would scarcely seem so. The bee uses for building, modelling, waxing, bottling honey, exactly the same organs that her sisters, the ammophile, bembex, sphex, ant, chalicodome, use for hollowing earth, excavating sand, making cellars, mud houses. The libellule does nothing with the hooks which render the termite dangerous, and she loafs, while her industrious brother, also a neuropter and nothing more, builds Himalayas.

The mole-cricket is so well organized for digging with her short powerful bow legs that she could cut sandstone : she frequents only the soft soil of gardens. The antophore, on the other hand, with no instruments save her mediocre mandibles, her velvet paws, forces the cement which holds stone walls together, and bores the hardened earth of the slopes by the roadside.

Insects, like man, moreover, ask nothing better than to do nothing and to let their tools sleep ; the xylocope, that fine violet bumble-bee who ought to bore into wood a gallery twice a hand's length wherein to lay her eggs, if she finds a suitable hole ready made, confines herself to the meagrest possible works

The Natural Philosophy of Love

of accommodation. In sum, the insects who like the saw-fly (tenthrædes) use a precise instrument for a precise job, are almost rare.

Man's hand, to come back to this point, is useful to him because he is intelligent. In itself the hand is nothing. Proof lies in the monkeys and rodents who use their hands only to climb trees, louse themselves, and crack nuts. Our five fingers ! Really nothing is more broadcast in nature, where they are only a sign of antiquity : the saurians have them, and are not a bit more clever thereby. It is without fingers, without hands, without members that the larvæ of insects construct for themselves marvellous mosaic shells, weave themselves tents in silk-floss, exercise the trades of plasterer, miner, and carpenter. But this hand of man, become the world's marvel, how inferior to his genius, and how he has had to lengthen it, refine it, complicate it, in order to obtain obedience to the increasingly precise orders of his intelligence. Has the hand created machines ? Man's intelligence immeasurably surpasses his organs, and submerges them ; it demands of them the impossible and the absurd : hence the railway, the telegraph, the microscope and everything which multiplies the power of organs which have become rudimentary in the face of the brains' exigence, the brain being our master, who has demanded also of the sexual organs more than they were able to give : it is to satisfy these orders that the bed of love has been scattered with so many dreams and rose-leaves.

It is difficult to make people understand that the eye sees, not because it is an eye, but because it is situated at the tip of some filaments of nerve which are sensitive to light. At the end of filaments sensitive to sound, the eye would hear. Doubtless it is adapted to its function, as the ear is to hearing, but this function is an effect, not a cause. The eyes of insects are very

Tyranny of the Nervous System

different from ours. We have heard of the experiments of a German savant who wished to throw visual images on the brain without the eye's intervention. This is suspicious, but not absurd: insects are gifted certainly with the power to smell, but no one has ever been able to discover the organ in any single one of them; and, also, the rôle of the antennæ which seems very considerable in their life, remains very obscure, since the removal of these appendices has not always a measurable effect on their activity.¹

Organs, evidently the most useful, are sometimes placed in a position which diminishes their value. Notice a resting horse, and another horse coming toward him (observation can be made quite easily in the streets of Paris), what is he to do to gauge the danger, and reconnoitre the movement? Look at the other horse? No. His eyes are made to look sideways, not forward. He uses his long ears, raises them, shifts their open side toward the noise. Reassured he lets them fall, and re-establishes his calm. The horse looks with his ears. The blinkers by which people pretend to make him look forward, merely blind him, and perhaps, thereby diminish his impressionability. Blind horses, moreover, do the same work as the others.

The senses, as one knows, are substitutable one for the other, in a certain degree; but in the normal state they seem rather to reinforce each other mutually, and lend each other a certain support. One does not shut the eyes to hear better, save when one has determined the source of the sound. And even then, is it to hear better? Is it not rather to reflect and to hear at the same time, to manage an interior concentration with which the eye, essentially an explorative organ, would interfere?

¹ Fabre's experiments on mason-bees, the shaggy ammophile, and Great-Peacock moth.

The Natural Philosophy of Love

It is in love that this alliance of all the senses is most intimately exercised. In superior animals, as well as in man, each sense, together or in groups, comes to reinforce the genital sense. None remain inactive; eye, ear, scent, touch, even taste come into play. Thus one explains the gleam of plumage, the dance, song, sexual odours. The female eye, in birds, is more sensitive than the male eye; the contrary is true of humanity; but female birds and women are particularly moved by song or words. The two sexes in dogs have equally recourse to scent; sight seems to play but an insignificant rôle in their sexual access, since minuscule canine beasts do not fear to address themselves to monsters, which for man would be in proportion more than that of a mammoth. Insects before mating often caress each other with their mysterious antennæ; the male is sometimes given a sounding apparatus; cricket and grasshopper drum to charm their companions.

It is not necessary to explain how in humans, especially in the male, all the senses concur in the amour, at least when moral and religious prejudices do not stop their impetus. It should be so, in an animal so sensitive, and of so complex and multiple a sensibility. The abstention of a single sense from the coupling is enough to enfeeble the pleasure very greatly. The coldness of many women may proceed less from a diminution of their genital sense, than from the general mediocrity of their senses. Intelligence, being but the ripe fruit of the general sensibility, its intensity is very often found to be in a certain relation with the sexual sensibility. Absolute coldness might signify stupidity. There are, however, too many exceptions for one to generalize in this matter. It happens, indeed, that intelligence instead of being the sum total of the sensibility, is, so to speak, the deviation or transmutation. There remains very little sensibility; it is nearly all turned into intelligence.

Tyranny of the Nervous System

Every organized animal has a master, its nervous system ; and there is, doubtless, no real life save where a nervous system exists, be it the magnificent infinitely branching tree of mammals and birds, be it the double, knotted cord of the molluscs, or the nail head which is planted, in ascides, between the mouth and anal orifice. As soon as this new matter appears, it reigns despotically, and the unforeseen appears in the world. One would say a conqueror, or rather an intruder, a parasite come in by stealth, and lifting itself into the royal rôle.

Animals bear this tyranny better than man. Their master asks fewer things. Often it only asks one : to create a being in its exact likeness. The animal is sane, that is to say, ruled ; man is mad, that is to say, out of rule : he has so many orders to execute at once, that he scarcely does any one well. In civilized countries he can hardly reproduce himself and the species is in danger. It would disappear, if the means of protecting it did not compensate the sterility.

One cannot say that humanity has attained its intellectual limits, although its physical evolution seems completed ; but as superior human specimens are nearly always sterile, or capable of only mediocre posterity, it is found that, alone among values, intelligence is not transmitted by generation. Then the circle closes and the same effort ends ceaselessly in the same recommencement. However, even here, artificial means intervene, and the transmission of the acquisitions of intelligence is relatively assured by all sorts of instruments. This mechanism, much inferior to carnal generation, permits us, if the most exquisite forms of intelligence disappear as fast as they flower, to preserve at least part of their contents. Notions are transmitted, that is a result, even though most of them are vain, in default of sensibilities sufficiently powerful to assimilate them and make a real life of them.

The Natural Philosophy of Love

Finally, if man ought to abdicate, which seems unlikely, animality is rich enough to raise up an inheritor. The candidates for humanity are in great number, and they are not those whom the crowd supposes. Who knows if our descendants may not some day find themselves faced with a rival, strong and in the flower of youth. Creation has not gone on strike since man appeared: since making this monster, nature has continued her work: the human hazard might reproduce itself on the morrow.

Translator's Postscript

" Il y aurait peut-être une certaine corrélation entre la copulation complète et profonde et le développement cérébral."

NOT only is this suggestion, made by our author at the end of his eighth chapter, both possible and probable, but it is more than likely that the brain itself, is, in origin and development, only a sort of great clot of genital fluid held in suspense or reserve; at first over the cervical ganglion, or, earlier or in other species, held in several clots over the scattered chief nerve centres; and augmenting in varying speeds and quantities into medulla oblongata, cerebellum and cerebrum. This hypothesis would perhaps explain a certain number of as yet uncorrelated phenomena both psychological and physiological. It would explain the enormous content of the brain as a maker or presenter of images. Species would have developed in accordance with, or their development would have been affected by the relative discharge and retention of the fluid; this proportion being both a matter of quantity and of quality, some animals profiting hardly at all by the alluvial Nile-flood; the baboon retaining nothing; men apparently stupefying themselves in some cases by excess, and in other cases discharging apparently only a surplus at high pressure; the imbecile, or the genius, the "Strong-minded."

I offer an idea rather than an argument; yet if we consider that the power of the spermatozoid is precisely the power of exteriorizing a form, and if we consider the lack of any other known substance in nature capable of growing into brain, we are left with only one surprise, or rather one conclusion, namely,

The Natural Philosophy of Love

in face of the smallness of the average brain's activity, we must conclude that the spermatozoic substance must have greatly atrophied in its change from lactic to coagulated and hereditarily coagulated condition. Given, that is, two great seas of this fluid, mutually magnetized, the wonder is, or at least the first wonder is, that human thought is so inactive.

Chemical research may have something to say on the subject, if it be directed to comparison of brain and spermatophore in the nautilus, to the viscous binding of the bee's fecundative liquid. I offer only reflections, perhaps a few data; indications of earlier adumbrations of an idea which really surprises no one, but seems as if it might have been lying on the study table of any physician or philosopher.

There are traces of it in the symbolism of phallic religions, man really the phallus or spermatozoid charging, head-on, the female chaos; integration of the male in the male organ. Even oneself has felt it, driving any new idea into the great passive vulva of London, a sensation analogous to the male feeling in copulation.

Without any digression on feminism, taking merely the division Gourmont has given (Aristotelian, if you like), one offers woman as the accumulation of hereditary aptitudes, better than man in the "useful gestures," the perfections; but to man, given what we have of history, the "inventions," the new gestures, the extravagance, the wild shots, the impractical, merely because in him occurs the new up-jut, the new bathing of the cerebral tissues in the residuum, in *la mousse* of the life sap.

Or, as I am certainly neither writing an anti-feminist tract, nor claiming disproportionate privilege for the spermatozoid, for the sake of symmetry ascribe a cognate rôle to the ovule, though I can hardly be expected to introspect it. A flood is as bad as a

Translator's Postscript

famine ; the ovular bath could still account for the refreshment of the female mind, and the recharging, reglacing of its "traditional aptitudes" ; where one woman appears to benefit by an alluvial clarifying, ten dozen appear to be swamped.

Postulating that the cerebral fluid tried all sorts of experiments, and, striking matter, forced it into all sorts of forms, by gushes ; we have admittedly in insect life a female predominance ; in bird, mammal and human, at least an increasing male prominence. And these four important branches of "the fan" may be differentiated according to their apparent chief desire, or source of choosing their species.

Insect, utility ; bird, flight ; mammal, muscular splendour ; man, experiment.

The insect representing the female, and utility ; the need of heat being present, the insect chooses to solve the problem by hibernation, i.e. a sort of negation of action. The bird wanting continuous freedom, feathers itself. Desire for decoration appears in all the branches, man exteriorizing it most. The bat's secret appears to be that he is not the bird-mammal, but the mammal-insect : economy of tissue, hibernation. The female principle being not only utility, but extreme economy, woman, falling by this division into a male branch, is the least female of females, and at this point one escapes from a journalistic sex-squabble into the opposition of two principles, utility and a sort of venturesomeness.

In its subservience to the money fetish our age returns to the darkness of mediaevalism. Two osmies may make superfluous eggless nests, but do not kill each other in contesting which shall deposit the supererogatory honey therein. It is perhaps no more foolish to go at a hermit's bidding to recover an old sepulchre than to make new sepulchres at the bidding of finance.

The Natural Philosophy of Love

In his growing subservience to, and adoration of, and entanglement in machines, in utility, man rounds the circle almost into insect life, the absence of flesh ; and may have need even of horned gods to save him, or at least of a form of thought which permits them.

Take it that usual thought is a sort of shaking or shifting of a fluid in the viscous cells of the brain ; one has seen electricity stripping the particles of silver from a plated knife in a chemical bath, with order and celerity, and gathering them on the other pole of a magnet. Take it as materially as you like. There is a sort of spirit-level in the ear, giving us our sense of balance. And dreams ? Do they not happen precisely at the moments when one has tipped the head ; are they not, with their incoherent mixing of known and familiar images, like the pouring of a complicated honeycomb tilted from its perpendicular ? Does not this give precisely the needed mixture of familiar forms in non-sequence, the jumble of fragments each coherent within its own limit ?

And from the popular speech, is not the sensible man called "level-headed," has he not his "head" well screwed on or "screwed on straight" ; and are not lunatics and cranks often recognizable from some peculiar carriage or tilt of the head-piece ; and is not the thinker always pictured with his head bowed into his hand, yes, but level so far as left to right is concerned ? The upward-jaw, head-back pose has long been explained by the relative positions of the medulla and the more human parts of the brain ; this need not be dragged in here ; nor do I mean to assert that you can cure a lunatic merely by holding his head level.

Thought is a chemical process, the most interesting of all transfusions in liquid solution. The mind is an up-spurt of sperm, no, let me alter that ; trying to watch the process : the

Translator's Postscript

sperm, the form-creator, the substance which compels the ovule to evolve in a given pattern, one microscopic, minuscule particle, entering the "castle" of the ovule.

"Thought is a vegetable," says a modern hermetic, whom I have often contradicted, but whom I do not wish to contradict at this point. Thought is a "chemical process" in relation to the organ, the brain; creative thought is an act like fecundation, like the male cast of the human seed, but given that cast, that ejaculation, I am perfectly willing to grant that the thought once born, separated, in regard to itself, not in relation to the brain that begat it, does lead an independent life much like a member of the vegetable kingdom, blowing seeds, ideas from the paradisial garden at the summit of Dante's *Purgatory*, capable of lodging and sprouting where they fall. And Gourmont has the phrase "fecundating a generation of bodies as genius fecundates a generation of minds."

Man is the sum of the animals, the sum of their instincts, as Gourmont has repeated in the course of his book. Given, first a few, then as we get to our own condition, a mass of these spermatozoic particles withheld, in suspense, waiting in the organ that has been built up through ages by a myriad similar waitings.

Each of these particles is, we need not say, conscious of form, but has by all counts a capacity for formal expression: is not thought precisely a form-comparing and form-combining?

That is to say we have the hair-thinning "abstract thought" and we have the concrete thought of women, of artists, of musicians, the mockingly "long-haired," who have made everything in the world. We have the form-making and the form-destroying "thought," only the first of which is really satisfactory. I don't wish to be invidious, it is perfectly possible to consider the "abstract" thought, reason, etc., as the

The Natural Philosophy of Love

comparison, regimentation, and least common denominator of a multitude of images, but in the end each of the images is a little spoiled thereby, no one of them is the Apollo, and the makers of this kind of thought have been called dryasdust since the beginning of history. The regiment is less interesting as a whole than any individual in it. And, as we are being extremely material and physical and animal, in the wake of our author, we will leave old wives' gibes about the profusion of hair, and its chance possible indication or sanction of a possible neighbouring health beneath the skull.

Creative thought has manifested itself in images, in music, which is to sound what the concrete image is to sight. And the thought of genius, even of the mathematical genius, the mathematical prodigy, is really the same sort of thing, it is a sudden out-spurt of mind which takes the form demanded by the problem; which creates the answer, and baffles the man counting on the abacus.

I question the remarks about the sphex in Chapter 19, "*que le sphex s'est formé lentement*," I query this with a conviction for which anyone is at liberty to call me lunatic, and for which I offer no better ground than simple introspection. I believe, and on no better ground than that of a sudden emotion, that the change of species is not a slow matter, managed by cross-breeding, of nature's leporides and mules, I believe that the species changes as suddenly as a man makes a song or a poem, or as suddenly as he *starts* making them, more suddenly than he can cut a statue in stone, at most as slowly as a locust or long-tailed Sirmione false mosquito emerges from its out-grown skin. It is not even proved that man is at the end of his physical changes.

Say that the diversification of species has passed its most sensational phases, say that it had once a great stimulus

Translator's Postscript

from the rapidity of the earth's cooling, if one accepts the geologists' interpretation of that thermometric cyclone. The cooling planet contracts, it is as if one had some mud in a tin pail, and forced down the lid with such pressure that the can sprung a dozen leaks, or it is as if one had the mud in a linen bag and squeezed; merely as mechanics (not counting that one has all the known and unknown chemical elements cooling simultaneously), but merely as mechanics this contraction gives energy enough to squeeze vegetation through the pores of the imaginary linen and to detach certain particles, leaving them still a momentum. A body should cool with decreasing speed in measure as it approaches the temperature of its surroundings; however, the earth is still, I think, supposed to be warmer than the surrounding unknown, and is presumably still cooling, or at any rate it is not proved that man is at the end of his physical changes. I return to horned gods and the halo in a few paragraphs. It is not proved that even the sort of impetus provided by a shrinking of planetary surface is denied one.

What is known is that man's great divergence has been in the making of detached, resumable tools.

That is to say, if an insect carries a saw, it carries it all the time. The "next step," as in the case of the male organ of the nautilus, is to grow a tool and detach it.

Man's first inventions are fire and the club, that is to say he detaches his digestion, he finds a means to get heat without releasing the calories of the log by internal combustion inside his own stomach. The invention of the first tool turned his mind (using this term in the full sense); turned, let us say, his "brain" from his own body. No need for greater antennæ, a fifth arm, etc., except, after a lapse, as a *tour de force*, to show that he is still lord of his body.

The Natural Philosophy of Love

That is to say the crawfish's long feelers, all sorts of extravagances in nature may be taken as the result of a single gush of thought. A single out-push of a demand, made by a spermatic sea of sufficient energy to cast such a form. To cast it as one electric pole will cast a spark to another; to exteriorize; sometimes to act in this with more enthusiasm than caution.

Let us say quite simply that light is a projection from the luminous fluid, from the energy that is in the brain, down along the nerve cords which receive certain vibrations in the eye. Let us suppose man capable of exteriorizing a new organ, horn, halo, Eye of Horus. Given a brain of this power, comes the question, what organ, and to what purpose?

Turning to folk-lore, we have Frazer on horned gods, we have Egyptian statues, generally supposed to be "symbols," of cat-headed and ibis-headed gods. Now in a primitive community, a man, a volontaire, might risk it. He might want prestige, authority, want them enough to grow horns and claim a divine heritage, or to grow a cat head; Greek philosophy would have smiled at him, would have deprecated his ostentation. With primitive man he would have risked a good deal, he would have been deified, or crucified, or possibly both. To-day he would be caught for a circus.

One does not assert that cat-headed gods appeared in Egypt after the third dynasty; the country had a long memory and such a phenomenon would have made some stir in the valley. The horned god would appear to have persisted, and the immensely high head of the Chinese contemplative as shown in art and the China images is another stray grain of tradition.

But man goes on making new faculties, or forgetting old ones. That is to say you have all sorts of aptitudes developed without external change, which in an earlier biological state would possibly have found carnal expression. You have every

Translator's Postscript

exploited "hyper-æsthesia," i.e. every new form of genius, from the faculty of hearing four parts in a fugue perfectly, to the ear for money (*vide* Henry James in *The Ivory Tower*, the passages on Mr. Gaw). Here I only amplify what Gourmont has indicated in Chapter 20. You have the visualizing sense, the "stretch" of imagination, the mystics,—for what there is to them—Santa Theresa who "saw" the microcosmos, hell, heaven, purgatory complete, "the size of a walnut"; and you have Mr. W., a wool-broker in London, who suddenly at 3 a.m. visualizes the whole of his letter-file, three hundred folios; he sees and reads particularly the letter at folder 171, but he sees simultaneously the entire contents of the file, the whole thing about the size of two lumps of loaf sugar laid flat side to flat side.

Remains precisely the question: man feeling this protean capacity to grow a new organ: what organ shall it be? Or new faculty: what faculty?

His first renunciation, flight, he has regained, almost as if the renunciation, so recent in terms of biology, had been committed in foresight. Instinct conserves only the "useful" gestures. Air provides little nourishment, and anyhow the first great pleasure surrendered, the simple ambition to mount the air has been regained and regratified. Water was never surrendered, man with subaqueous yearnings is still, given a knife, the shark's vanquisher.

The new faculty? Without then the ostentation of an organ. Will? The hypnotist has shown the vanity and Blake the inutility of willing trifles, and black magic its futility. The telepathic faculty? In the first place is it new? Have not travellers always told cock and bull stories about its existence in savage Africa? Is it not a faculty that man has given up, if not as useless, at any rate as of a very limited use, a distraction,

The Natural Philosophy of Love

more bother than it is worth? Lacking a localizing sense, the savage knowing, if he does, what happens "somewhere" else, but never knowing quite where. The faculty was perhaps not worth the damage it does to concentration of mind on some useful subject. "Instinct preserves the useful gestures."

Take it that what man wants is a capacity for clearer understanding, or for physical refreshment and vigour, are not these precisely the faculties he is forever hammering at, perhaps stupidly? Muscularly he goes slowly, athletic records being constantly worn down by millimetres and seconds.

I appear to have thrown down bits of my note somewhat at random; let me return to physiology. People were long ignorant of the circulation of the blood; that known, they appeared to think the nerves stationary; Gourmont speaks of "circulation nerveuse," but many people still consider the nerve as at most a telegraph wire, simply because it does not bleed visibly when cut. The current is "interrupted." The school books of twenty years ago were rather vague about lymph, and various glands still baffle physicians. I have not seen the suggestion that some of them may serve rather as fuses in an electric system, to prevent short circuits, or in some variant or allotropic form. The spermatozoid is, I take it, regarded as a sort of quintessence; the brain is also a quintessence, or at least "in rapport with" all parts of the body; the single spermatozoid demands simply that the ovule shall construct a human being, the suspended spermatozoid (if my wild shot rings the target bell) is ready to dispense with, in the literal sense, incarnation, en-fleshment. Shall we postulate the mass of spermatozooids, first accumulated in suspense, then specialized?

Three channels, hell, purgatory, heaven, if one wants to follow yet another terminology: digestive excretion, incarnation,
178

Translator's Postscript

freedom in the imagination, i.e. cast into an exterior formlessness, or into form material, or merely imaginative visually or perhaps musically or perhaps *fixed* in some other sensuous dimension, even of taste or odour (there have been perhaps creative cooks and perfumers?).

The dead laborious compilation and comparison of other men's dead images, all this is mere labour, not the spermatozoic act of the brain.

Woman, the conservator, the inheritor of past gestures, clever, practical, as Gourmont says, not inventive, always the best disciple of any inventor, has been always the enemy of the dead or laborious form of compilation, abstraction.

Not considering the process ended; taking the individual genius as the man in whom the new access, the new superfluity of spermatozoic pressure (quantitative and qualitative) upshoots into the brain, alluvial Nile-flood, bringing new crops, new invention. And as Gourmont says, there is only reasoning where there is initial error, i.e. weakness of the spurt, wandering search.

In no case can it be a question of mere animal quantity of sperm. You have the man who wears himself out and weakens his brain, echo of the orang, obviously not the talented sieve; you have the contrasted case in the type of man who really cannot work until he has relieved the pressure on his spermatocanals.

This is a question of physiology, it is not a question of morals and sociology. Given the spermatozoic thought, the two great seas of fecundative matter, the brain lobes, mutually magnetized, luminous in their own knowledge of their being; whether they may be expected to seek exterior "luxuria," or whether they are going to repeat Augustine hymns, is not in my jurisdiction. An exterior paradise might not allure them "La bêtise humaine

The Natural Philosophy of Love

est la seule chose qui donne une idée de l'infini," says Renan, and Gourmont has quoted him, and all flesh is grass, a superior grass.

It remains that man has for centuries nibbled at this idea of connection, intimate connection between his sperm and his cerebration, the ascetic has tried to withhold all his sperm, the lure, the ignis fatuus perhaps, of wanting to super-think; the dope-fiend has tried opium and every inferior to Bacchus, to get an extra kick out of the organ, the mystics have sought the gleam in the tavern, Helen of Tyre, priestesses in the temple of Venus, in Indian temples, stray priestesses in the streets, unprootable custom, and probably with a basis of sanity. A sense of balance might show that asceticism means either a drought or a crowding. The liquid solution must be kept at right consistency; one would say the due proportion of liquid to viscous particles, a good circulation; the actual quality of the sieve or separator, counting perhaps most of all; the balance and retentive media.

Perhaps the clue is in Propertius after all:

Ingenium nobis ipsa puella fecit.

There is the whole of the XIIIth century love cult, and Dante's metaphysics a little to one side, and Gourmont's Latin *Mystique*; and for image-making both Fenollosa on *The Chinese Written Character*, and the paragraphs in *Le Problème du Style*. At any rate the quarrel between cerebralist and viveur and ignorantist ends, if the brain is thus conceived not as a separate and dessicated organ, but as the very fluid of life itself.

EZRA POUND.

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